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ABSTRACT

A study was conducted to develop a model for a computer-based career information delivery system for use in New York State occupational education programs. The study included a literature review and five major substudies (information validation, user satisfaction, and vendor surveys; site visits to selected schools and agencies using career information systems; and a demonstration of career information delivery systems to a system review panel). The literature review yielded a list of 85 information components that was confirmed by the validation survey and enlarged by surveys of principals, counselors, students, and parents. Of the five career information systems presented by vendors, four were rated satisfactory and just passing. It was decided that the state should pursue the development and utilization of career information delivery systems. No single system should be adopted; however, all systems considered for use should undergo some sort of approval process. Activities such as staff development workshops and printed communications should be developed as soon as possible, and a career information delivery system coordinating office should be created to oversee the coordination and continued improvement of career information systems for vocational students. (Appendixes include copies of all the project surveys and related materials, correspondence, and forms.) (MN)

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EVALUATING COMPUTERIZED CAREER INFORMATION SYSTEMS FOR USE WITH OCCUPATIONAL EDUCATION CURRICULA

FINAL REPORT

by

Deborah Perlmutter Bloch, Ph.D., Principal Investigator
Joyce Ford Kinnison, Associate Investigator

August 31, 1986

This report was jointly sponsored by the New York State Education Department and the New York State Department of Labor through the New York State Occupational Information Coordinating Committee. Funding was provided by the Carl D. Perkins Vocational Education Act.

The University of the State of New York
The State Education Department
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CE045388

EVALUATING COMPUTERIZED CAREER INFORMATION SYSTEMS FOR USE WITH OCCUPATIONAL EDUCATION CURRICULA

EXECUTIVE SUMMARY

The overall purpose of the New York State study, "Evaluating Computerized Career Information Systems for Use With Occupational Education Curricula" was to identify a New York State model for a computer-based career information delivery system or systems to meet the objectives of occupational education curricula and implementation of guidance plans, as well as the needs of junior high school students, high school students, and adults, including special needs populations in those groups.

After the review of the literature, five major activities or sub-studies were planned and carried out. They were:

1. The Information Validation Survey. Information components and design considerations which were identified through the review of the literature were presented in a survey instrument with a Likert-type scale ranging from "highly desirable" to "highly undesirable." These instruments were sent to a national panel of experts in career guidance and a state panel of experts in guidance and occupational education.
2. The Surveys of User Satisfaction. Surveys to determine the degree of satisfaction with systems in use as well as the overall needs and uses for a system were constructed for

principals, counselors, students and parents. A selection of schools throughout the State using C-LECT, CHOICES, CIS, Discover, GIS, and SIGI were surveyed.

3. The site visits. Selected schools and agencies using the major systems were visited to obtain information about the uses of and satisfaction with systems through in-depth interviews with counselors at those sites.

4. Request for Information from vendors. Based on the results of the Information Validation Survey, the Surveys of User Satisfaction, and the site visits, a request for information regarding system components and costs was developed and sent to the vendors identified as active in New York State.

5. The demonstration of career information delivery systems to the System Review Panel. The same vendors were invited to make a structured presentation to a panel of guidance, occupational education, rehabilitation, and labor professionals both from State government and local agencies and schools. A rating instrument was designed with a Likert-type scale for the System Review Panel's evaluation of the systems.

The review of the literature yielded a list of 85 information components and design considerations which were validated through the responses of the national and state panels of experts to the Information Validation Survey.

Surveys of User Satisfaction of principals, counselors, students, and parents confirmed and enlarged the list. In general, these surveys showed that the CIDS were being used in the schools primarily for guidance with some classroom and group instruction activities. The students' responses showed that they found the systems easy and enjoyable to use and more useful for information gathering than for career decision making, thus, indirectly, supporting the idea that a career information delivery system is a resource to be used as part of an overall career guidance or education program. The parents' responses showed that they strongly supported the use of computerized systems in their schools and the use of computers for career information delivery and exploration, but not for values clarification. Counselors were highly supportive of computerized career information, but only moderately satisfied with the systems they had. Counselors expressed particular concerns with the quality and timeliness of the information in the systems and the adequacy of the training.

Five major vendors of CIDS in New York State responded to lengthy requests for information, provided printouts of information which was analyzed for comprehensiveness and accuracy, and demonstrated their systems to a review panel. A process for rating the CIDS taking all of this into consideration was developed and used for measuring the part and total value of each system. While different systems excelled or were weak in different aspects -- information components contained, system design considerations, user support materials, information comprehensiveness, rating by the System Review Panel -- the final analysis showed that four of the systems were satisfactory (In descending Order : CIS, GIS, CHOICES and Discover) and one (C-LECT) just passing. This confirmed the counselors' levels of satisfaction, or dissatisfaction, with the CIDS in use.

While costs were not analyzed as part of the total rating system, they were gathered through the RFI and comparative analyses presented. This analysis showed large variations in basic system delivery, developmental, and total costs. It also revealed important differences among the CIDS in such issues as entry and ownership of state developed data and files.

The recommendations which were made took into consideration a number of factors. First, there was a high degree of general support for computerized career information delivery systems expressed by the various user communities. Second, although there were weaknesses identified in the systems, there was generally more satisfaction than dissatisfaction, and there has been a varying degree of investment of resources in each of the CIDS by schools and agencies in the State. Third, the greatest area of dissatisfaction could be interpreted as a hue and cry for more accurate, more up-to-date, and more specific occupational and educational information. Fourth, an analogy to the tradition in New York State for approved, rather than adopted, texts may be drawn to educational software, and thence to CIDS.

Eight recommendations were made.

1. The State should pursue the development and utilization of career information delivery systems.

2. No single system should be adopted. Instead, systems should be rated, and if satisfactory, approved.

3. Some meaning should be ascribed to the fact that a system is approved.

4. The five systems rated for the study (C-LECT, CHOICES, CIS, Discover, and GIS) should be approved. (SIGI, which did not complete the process, and any other systems should not be considered approved until they are rated.)

5. The process for system approval and the related rating sheets presented in the study should be adopted and utilized as the process for approving systems.

6. Activities such as staff development workshops and printed communications should be undertaken as soon as possible to inform those responsible for buying and using CIDS of the results of this study.

7. The State of New York should enhance its primary data series data collection so that the series can incorporate the information components and level of detail needed by CIDS as indicated by the information validation survey and surveys of user satisfaction. Since the Department of Labor has primary responsibility for such activities, staff and resources should be made available as needed to support this recommendation.

8. The function of coordinating and continuously improving career information delivery should be focused in one location. A unit, the Career Information Delivery System Coordinating Office (CIDSCO) should be created in the State Education Department where a strong network of users already exists. In order to coordinate and improve career information delivery, this unit should:

A. develop state career information — including information about occupations, secondary areas of concentration; postsecondary educational programs; colleges and universities; proprietary schools; financial aids and scholarships.

B. be responsible for seeing that the state information is incorporated in the approved CIDS, with the State carrying out the data entry.

C. provide computer expertise in CIDS management and development.

D. be responsible for rating and approving other CIDS using the process developed in this study.

E. negotiate procurement contracts with all approved CIDS.

F. disseminate information and conduct staff development activities regarding CIDS.

With the establishment of the CIDSCO, New York will be taking the best possible approach for serving CIDS users across the State. This approach will provide up-to-date, accurate career information, qualify control and standards, and meet the local needs and preferences. This innovative approach is particularly appropriate to the size, diversity, and resources of New York State.

EVALUATING COMPUTERIZED CAREER INFORMATION SYSTEMS FOR USE WITH OCCUPATIONAL EDUCATION CURRICULA

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INTRODUCTION

The overall purpose of the New York State study, "Evaluating Computerized Career Information Systems for Use With Occupational Education Curricula," was to identify a New York State model for a computer-based career information delivery system or systems to meet the objectives of occupational education curricula and implementation of guidance plans, as well as the needs of junior high school students, high school students, and adults, including special needs populations in those groups.

The impetus for the study was the growing awareness of career information needs identified in the implementation of the Regents Action Plan, particularly in the development of the new occupational education curricula, "Home and Career Skills" and "Introduction to Technology" mandated for the seventh and eighth grades and "Introduction to Occupations," as well as in the development and review of guidance plans.

The study was conducted by the principal and associate investigators, Deborah Perlmutter Bloch, Ph.D. and Joyce Ford Kinnison, from March 1, 1986 through August 31, 1986. It was funded by the New York State Education Department, Office of Occupational and Continuing Education, James A. Kadamus, Assistant Commissioner, and carried out under the auspices of the New York State Occupational Information Coordinating Committee.

The statutory members of the New York SOICC are:

-New York State Education Department
James A. Kadamus, Chairman of SOICC and Assistant Commissioner
Office of Occupational and Continuing Education
-New York State Department of Labor
Robert Gulotty, Director
Job Service Division
-New York State Department of Labor
John F. Hudacs, Executive Deputy Industrial Commissioner
-New York State Department of Commerce
Dennis Rapp, Deputy Commissioner
Division of Policy and Research
-New York State Department of Social Services
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Technical assistance to the project was provided by Robert DeFabio, New York State Education Department, and David Nyhan, New York State Department of Labor.

This report is composed of the following chapters:

Background
Review of the Literature
Methodology
Findings
Ancillary Issues
Summary and Recommendations

Chapter One
BACKGROUND

Introduction

The overall purpose of the New York State study, "Evaluating Computerized Career Information Systems for Use With Occupational Education Curricula" was to identify a New York State model for a computer-based career information delivery system or systems to meet the objectives of occupational education curricula and implementation of guidance plans, as well as the needs of junior high school students, high school students, and adults, including special needs populations in those groups.

More than a decade of work in developing and using computer-based systems for career information has taken place at both the national and State levels. This study is set against that historical background. Three sections briefly describing the background are presented in this chapter. They are: "National Activities," "New York State Activities," and "New York State: Current Status."

National Activities

The movement toward the development and implementation of computerized career information systems began in the late 1960's, when the U. S. Department of Labor funded a research and development project in Oregon (the Occupational Information Access

System -- OIAS) to design and field test a model labor market information delivery system. The computerized system which resulted from this seminal work became the Career Information System (CIS). Based on the success of the Oregon work, the Department of Labor later funded the implementation of computerized systems in eight additional states.

In the Vocational Education Act of 1976 (PL 94-482), the Congress mandated the establishment of the National Occupational Information Coordinating Committee (NOICC) with State Occupational Information Coordinating Committees (SOICC's) to be established in the 50 states and seven Trust Territories. Growing out of the success of the Oregon CIS for use in career guidance and counseling activities and with the advent of an interest in promoting the use of computerized systems for educational activities across the country, there was included in one section of that act, the mandate that the NOICC and SOICC's should work to oversee the establishment of computerized occupational information systems in each state. Among other functions, these systems were to provide labor market and occupational information for students and adults in the process of career decision making.

The mandate for the development of computerized systems for career decision-making activities was further expanded in the Youth Employment and Training Program Act of 1977 (PL 95-93), the CETA Amendments of 1978 (PL 95-524), the Job Training Partnership Act of 1982, and the Carl D. Perkins Vocational Education Act of 1984.

Early in 1979, NOICC began a competitive Career Information Delivery System (CIDS) grant program to help fund the development and implementation of career information systems in the states. By 1986, NOICC, through the CIDS program, had made 26 grants to fund career information delivery systems. In addition, the program had funded most of the original CIS states to make data and delivery system modifications to their systems.

The major systems which are in operation in the country at this time are the Career Information System (CIS), the Guidance Information System (GIS), the System for Interactive Guidance and Information (SIGI), CHOICES, Discover, C-LECT, and the Computerized Occupational Information Network (COIN). The delivery modes for these systems include mainframe computer, minicomputer, microcomputer, card sort, microfiche, and print, with some sites utilizing combinations of two or more modes.

In 1984, the Perkins Vocational Education Act introduced a new legislative thinking process regarding career guidance programs at the state level. Until the passage of this legislation, federal laws defined career guidance as a support service. The Perkins Act went beyond that definition and established state authority for a comprehensive career guidance "program" for all youth and adults to meet their needs for career planning assistance.

New York State Activities

Efforts to meet the career information needs of the students and adults of New York State through the use of computer based career information delivery systems have been underway since the mid-1970's.

Among these early efforts were three studies. The first was a pilot program in the New York City high schools and other settings conducted by the Institute for Research and Development in Occupational Education (Center for Advanced Study in Education) at the City University of New York using GIS (Heller and Chitayat, 1976.) Following that, in 1980, an in-house comparative study of CHOICES and GIS was conducted by the New York SOICC. In 1981, a study of adult information needs and appropriate systems to meet those needs was completed. It evaluated CIS, GIS, and CBEOC, a system then being operated by the City University of New York through an Education Opportunity Center grant. Each of the studies confirmed the efficacy of the use of computer-based systems and the need for a comprehensive state system. Each of the studies identified career information needs, both common occupational and educational needs and the unique needs of particular populations.

None of the previous studies led to the development of a comprehensive state system. While they each contained useful information on which to build, the current study was broader in several key respects. It took into account all currently available and appropriate career information delivery systems.

It also addressed not only the needs of high school students and adults, but also two new major concerns: the needs of junior high school students and the methodology associated with successful infusion into classroom activities in conjunction with the curricula mandated by the Regents Action Plan.

In addition, individual local education agencies, BOCES, colleges, and other agencies have been using some of the major career information delivery systems available to them from system vendors. In 1979, New York City began to deliver, in 10 sites, locally developed occupational information and national post-secondary educational information, using CIS and GIS in combination in its system, MetroGuide. MetroGuide developed to the point where, by January 1986, using only CIS software, it was delivering locally developed information on occupations, post-secondary programs of study, financial aid, and proprietary schools and nationally developed college information at the 110 public high schools and selected other sites in New York City. In 1982, MetroGuide developed a sub-system for use in the intermediate/junior high schools to aid in articulation to high school. MetroGuide Junior was successfully pilot tested in five junior high schools and plans are in progress to utilize it in additional schools.

Currently, while MetroGuide is the only system with a central support staff developing local information, the largest vendor of national information within the State is GIS. In addition to major, widespread use of MetroGuide and GIS, Discover, CHOICES, and C-LECT are being used in junior high and high schools throughout the State; SIGI and Discover in libraries; SIGI, Discover, and CHOICES in colleges; and CHOICES in vocational rehabilitation offices. At present, although there may be some efforts to add state or local information by individual districts or systems, there is no centralized or organized effort to do this.

New York State: Current Status

The background of CIDS development, both in the nation and in New York State, pointed to three reasons for the State's being interested in looking at a model for a State system. The first reason was that many of the schools and agencies in the State have no access to a career information delivery system. According to estimates made in early 1986, the total number of school sites being served by computer-based systems was, at best, 650. In 1985, according to the State Education Department count of public schools, there were 235 middle schools, 353 junior high schools, 271 junior/senior high schools, 512 senior high schools, and 97 K-12 schools in the State. Fewer than 45% of the public schools with junior high school or high school populations were being served. In addition, in 1985 there were 2,149 non-public schools with junior and senior high school populations as well as community colleges, adult learning centers, libraries, educational information centers, and a variety of counseling agencies, which would benefit from having access to a computer-based career information delivery system.

The second reason was the potential for inconsistent and/or incorrect information being disseminated. In the absence of a State model, vendors and local agencies (with the exception of MetroGuide) deliver only national information which may or may not be correct for New York State. Further, no model exists on which to base the selection of a system. With the proliferation of microcomputers has come an enormous increase in available software which itself varies widely in price and quality. Thus school districts, BOCES, and the many other agencies needing CIDS may be choosing less than the best system or less than the best for the money.

A third reason arose from the inclusion in the Regents Action Plan of curricula -- "Home and Career Skills", "Introduction to Technology", and "Introduction to Occupations" (for students who plan a concentration in occupational subjects) -- which mandate the knowledge and use of career information. Without a State model, there existed the possibility of not only inconsistency of information and quality of delivery but also additional costs for the redundant development, entry, and maintenance of the information in local systems.

The State recognized that the delivery of career information involves the coordination of the component activities of a system for collecting, providing, and using information for specified target audiences. For a career information delivery system to be of maximum use to the people it has been purchased to serve, there must be a method for insuring: system appropriateness for the target population, the accuracy of the data, appropriate vocabulary, an absence of bias and stereotyping, timely data update, and the availability of adequate training. These activities are best managed at a centralized location.

Of course, education policy and program planning are both a local and a state function. However, with a coordinated state CIDS approach, the quality of the requisite national, state, and local information contained in a system can be better assured. Further, with the management of career information systems taking place at the state rather than the local level, economies of scale for costly services, such as information development, update, and management and system training can be achieved. Further this arrangement allows for coordinated purchasing, resulting in the possibility of major dollar savings for local school systems.

In addition to these three factors, the State recognized that career decision making in this age of rapidly changing technology is not a one-time affair. In school, individuals must learn how to make job and educational decisions, how to get the information they need for the decision, and how to get the information needed to act on the decision. Once out of school, people continue to need access to this information. Since it is estimated that adults make four to five major career changes in their working lives, they need information about skill transferability, appropriate jobs to meet their current needs and interests, and training and retraining opportunities. In this, which has been called the information age, the need for career and educational information will continue to grow. The economic health of New York State is linked to the accurate and timely provision of that information to its youth, adults, employers, educators, and planners.

With all these reasons as a motivating force, the State decided on a course of action to help identify the optimal path to take in providing the information needed by all the groups cited above. In late 1985, the decision was made to conduct this study "Evaluating Computerized Career Information Systems for Use With Occupational Education Curricula."

Given the historical background and current status of career information delivery systems, the principal and associate investigators identified seven factors crucial to completion of the study. They were:

1. the identification (both directly and indirectly through a review of the literature) of the career information needs related to the implementation of the "Home and Career Skills", "Introduction to Technology", "Introduction to Occupations", and other occupational curricula; the information needs related to the implementation of the State's guidance plans; and the career information needs of junior high school students, senior high school students, and adults, including populations with special needs;

2. the validation of those needs by both a state panel of experts and a national panel of experts in the field of career guidance;

3. the examination of users' areas of satisfaction and dissatisfaction with systems currently in use within New York State, by surveying school administrators, counselors, parents, and students and by visiting sites using the systems;

4. the development of a set of standards for a New York State career information delivery system or systems based on the assessed needs, the areas of user satisfaction and dissatisfaction with systems currently in use, and the professional criteria of the field of computer-based career information systems;

5. the evaluation, by a State panel, of the appropriate available systems using the criteria developed as a result of the above activities;

6. the evaluation of initial and maintenance, state and local costs associated with each of the systems; and

7. the development of recommendations to the State regarding the system or systems to be developed.

Chapter Two

REVIEW OF THE LITERATURE

Introduction

The major purpose of this review of the literature was to identify a broad base of information components and computerized system design considerations which are necessary and desirable in a career information delivery system to meet the needs of the citizens of New York State. The specific needs which will be addressed are those required:

-to support three new occupational education programs in the State;

-to implement the new Guidance Guidelines for the State which are contained in the new Commissioner's Regulations, Section 100.2; and

-to serve the career information needs of junior and senior high school students, adults, and populations with special needs.

In recent decades there has been an increasing recognition of the need for and usefulness of reliable occupational and career information for use in occupational instruction, career counseling and planning, and job placement activities. This recognition by labor market intermediaries and direct participants in the labor market led to an interest in identifying needed career information and systematizing it. Computerized systems which store, organize, update, and retrieve large quantities of information for immediate and easy access were a logical development (Harris, 1972.)

Career information is important in career decision making to help people become aware of and choose an occupation for which they are suited and which they would find rewarding, and to help them learn about and understand the range of career and educational opportunities which are available or are likely to be available to them (Fry, 1979.)

When accurate, reliable, up-to-date occupational information is provided to people, they have the opportunity to find jobs for which they are better suited. With occupational information, people learn how to prepare for specific occupations, the abilities and skills required in the occupations, and the varying working conditions and required personal attributes of different occupations (Parnes, 1975.) Andrisani (1978) pointed out that this information could aid the person in selecting an occupation for which he or she is suited, as well as aid in forming realistic expectations and aspirations about the labor market.

It is consistent with human capital theory that the provision of occupational information is an investment which can lead to higher earnings. Using a national sample of young men aged 14 to 24, Parnes and Kohen (1975) found that the youth's score on an occupational information test had a significantly positive effect on the youth's occupational status and hourly wage in the two years following the test. Stevenson (1978) found that a measure of labor market knowledge had a positive influence on the hourly wages for white and black youth of both sexes.

Thus, it can be seen that the use of occupational information for career decision making can have a variety of economically beneficial effects on workers.

Herr (1981) wrote about the use of a career information system for use in career counseling. Although he discussed career counseling in general, his main focus was the use of the system for in-school students. He stated that, based on the research in the field, "There appears to be no doubt that students who do not have access to or who do not possess occupational information pertinent to their goals are disadvantaged in career planning, choice, preparation and subsequent occupational success."

Other studies have shown that access to reliable labor market information results in such benefits as: increased market competition (Parnes, 1975;) increased productivity (Yavitz and Morse, 1973;) and increased equity (Parnes, 1975.) Increased availability of information is expected to create an improved opportunity to choose an appropriate occupation across individuals of all socioeconomic groups. Parnes also suggested that an equal opportunity to choose an occupation may narrow earnings differentials across occupations which are artificially inflated as a result of unequal access to the occupations.

These studies point out the need for and the benefits of the use of career information in career decision making. However, information must be structured in order to be useful. It is this structure which is the delineating characteristic of a computerized career information delivery system.

> An information system may be thought of as an organization or network for the collection and/or distribution of information. For NOICC/SOICC purposes, the information being collected and distributed is related to occupations. (The) purpose, simply stated, is to provide to users the occupationally related information necessary for decision making (NOICC, 1979.)

McKinlay and Ross (1978) reported results of the the early pilot tests of the computerized Oregon CIS. Some of the counselors who were part of the test which provided career information via the computer judged the system to be most valuable with young, disadvantaged, unmotivated clients. Others judged it to be useful for a wide variety of users, including bright and articulate college students, slow high school students, people with some idea of their goals, people with no idea what they want to do, returning servicemen, and potential college students.

Up-to-date, readily available career information can enhance the activities associated with vocational and career counseling, career decision making, job placement, job search, and teaching. Among the individuals identified as needing career planning information for these activities are youth, secondary and post-secondary students, the unemployed, the incarcerated, new entrants and re-entrants to the job market, people with handicapping conditions, people making mid-life career changes, military returnees, counselors, teachers, job placement specialists, and employers.

Naturally, the specific information needs of these groups are dependent upon the the activities of the individuals using the information. Certain information components become either more or less important depending on the needs and goals of the user. This review of the literature attempted to identify the information components and design considerations through an examination of:

-the specific needs of New York State as defined in the newly developed occupational education curricula and guidance plans;

-career development theory and guidance practices;

-standards of professional associations; and

-related research.

It should be noted that this review did not have as its purpose an extensive search of the literature of career development theory and guidance practices, but rather was intended specifically to identify career information components and system design considerations for New York State.

The review is divided into two major sections. The first section, "Career Information Components for Inclusion in a Computerized Career Information Delivery System," presents an analysis of the three occupational education curricula, an analysis of the guidance plan guidelines and a synthesis of writing on career development, guidance and standards. The second section, "Design Considerations for a Computerized Career Information Delivery System," is composed of a similar synthesis. The chapter concludes with a summary list of "Information Components and Design Considerations for a Computerized Career Information Delivery System."

Career Information Components for Inclusion in a Computerized Career Information Delivery System

Three major approaches were used to identify the career information components which would meet the needs of New York State. The first was a close analysis of the three occupational education curriculum guides: Home and Career Skills, Introduction To Technology, and Introduction To Occupations. The second was a similar analysis of the guidelines for guidance plans mandated by the new Part 100 of the Commissioner's Regulations, or the Regents Action Plan. The third was a reading of relevant career development guidance theory and research including both general works as well as those which dealt specifically with standards for and research on career information delivery systems.

NEW YORK OCCUPATIONAL EDUCATION CURRICULA

The three occupational education curricular programs examined here were pilot tested in New York State during the 1985-86 school year. Although the structure of the programs may change as a result of the pilot tests, career information will still be needed to meet the overall goals of the program. Therefore, in order to present the broadest picture possible, the following discussion about career information required to complement the programs includes an analysis both of general needs and specific information needed.

Home and Career Skills

There are three broad objectives of this curriculum which is required of all students in grades seven and eight. The first is to "Develop skills which lead to effective decision making, problem solving, and management in the home, school/ community, and workplace" (page 4.)

One of the areas to which the principles and process skills are to be applied is:

> Career Planning--an overview of work, tentative plans, and entrepreneurship...Career Planning gives students the chance to begin making decisions and solving problems related to tentative career plans (page 4.)

The "Career Planning" segment of the course "provides an opportunity to anticipate the future, identify employable traits, examine oneself in relation to the work environment, and to explore career opportunities" (page 114,) It further asserts that "Application of the decision making process encourages students to form tentative career plans" (page 114.)

Three of the seven competencies to be achieved are:

> 2. Identify personal characteristics which lead to job satisfaction
> 3. Formulate personal criteria for career planning
> 4. Apply the process skills to develop tentative career plans (page 115.)

Scattered throughout this "Career Planning" section are activities which require the student to use occupational and career information to meet goals. Seven examples of these are:

> (1) 3. Describe characteristics of work involving various work locations and conditions, work personnel, and work time or hours...Several work characteristics/environments are suggested..."
>
> You would like to work:
>
> -for people caring and serving
> -with data, facts, and records
> -with ideas, theories, and thought
> -with things, machines, and tools
> -outside most of the time
> -inside most of the time

-with other people
-as "boss" with responsibility for others
-following directions given by others
-where you'd get dirty
-where there's lots of noise
-where it is quiet and calm
-where you have many decisions to make doing physical labor
-where the work would be dangerous
-where you would help others
-where you earn lots of money
-where you earn lots of money doing something you don't like
-designing and creating things
-doing the same thing over and over
-at home on a flexible schedule
-where you need to take work home
-on a flexible schedule
-on "off peak" hours (page 118.)

(2) 1. Given related checklists and evaluation aids, the student will apply the processes of decisionmaking, problem solving and management to personal career planning, with a degree of understanding acceptable to the instructor.

In order to do this, the student must be able to:

a. Identify areas of personal interests, abilities, and aptitudes
b. Identify personal skills (mental, physical, emotional, social)
c. Identify personal attitudes and values toward work, training/education, and life styles
d. List home, school, and work experiences which contribute to career selection
e. Formulate criteria for personal career planning (page 122.)

(3) 2. After preparing criteria for personal career planning, the student will use the decisionmaking process to formulate tentative career plans...

In order to do this, the student must be able to:

a. Identify and use available career resources to obtain information about careers and employment trends
b. Identify career clusters and opportunities for the development of transferable skills
c. Match career characteristics and personal characteristics to serve as a guide in career decisionmaking
d. Formulate a personal tentative career plan which includes short-range and long-range steps needed to carry out the career plan (page 122.)

(4) 1. Students identify characteristics about themselves which will allow them to select appropriate careers:

-interests, activities providing enjoyment
-abilities, talents, aptitudes, skills
-values, job satisfactions, experiences
-freedom to make decisions and take responsibility
-companionship, working with others
-self-esteem, creativity
-self-direction
-self-approval, pride
-etc. (page 123.)

(5) 9. Have students match their personal traits, interests, values, and aptitudes with job tasks, requirements, preparation, and benefits (page 124.)

(6) 17. Help students group job titles into workable size units for exploration. Emphasize the importance of preparing for a career cluster instead of a specific job... (page 126.)

(7) 18. Have students practice writing a resume (page 126.)

It should be noted here that most computerized career information delivery systems have a structured search routine designed to allow the user to search for occupations on personal work preferences and other variables. This is dealt with in the section on system design considerations.

All the activities listed above could be enhanced by a computerized career information delivery system which also has detailed (not necessarily extensive) user materials which guide the students through the process of determining their own personal traits which might match careers and of determining which careers match those traits.

Specific career information components which are needed to complement "Home and Career Skills" activities include:

OCCUPATIONAL INFORMATION

Occupational title
Occupational description
Occupational group or cluster

Job duties
Interests
Aptitudes
Temperaments
Entry level skills required
Physical demands
Physical activities
Environmental/work conditions
Hours of work/travel
Industries in which occupations occur
Career ladder/advancement opportunities
Occupational outlook
Earnings and benefits
Education/training required
Skills transferability
Related occupations
Sources of additional information
Job seeking skills: resume writing
Values clarification
Interest assessment tool

EDUCATIONAL INFORMATION

Name and address of education/training institution
Type of institution
Academic/training programs offered
Occupations for which programs train
Types of degrees/certificates and length

Introduction to Technology

The first half of this program is designed to introduce students in grade seven to the nature of technology and its use in satisfying people's needs and wants. The second half, for students in grade eight, focuses on: technological concepts; technical processes: methods people can use to control technological concepts and processes: technological career opportunities; and the implication of technology to individuals and society.

One of the activities listed as a "constant" occurring throughout the teaching of "Introduction to Technology" for grade seven is:

> 8. Career Related Information
> Information about career opportunities should be infused wherever appropriate. It should be stressed that technology has affected all jobs, not just those in "high-tech" areas. The student should be made aware at all times of employability skills such as dependability, honesty, punctuality, reliability, responsibility, ability to work with others, pride in work, self-awareness, self-reliance and self-worth (page 6.)

The use of career information in instructional strategies is stressed throughout this syllabus. Specific uses include career awareness (defined as "a variety of experiences in which students learn about various career clusters, work requirements and job-readiness skills") and career exploration (defined as "investigating the necessary preparation, opportunities for jobs and potential for reward and fulfillment in various careers one might attempt to enter.") Decision making, "the process of identifying, analyzing and choosing among alternatives, then acting on and evaluating the results of the choice,") is also an activity for the course (Glossary, pages 2 and 3.)

The use of occupational information for career exploration and decision making which is evident in the "Grade 7 Syllabus" is also stressed in the "Grade 8 Syllabus" (pages 3 and 41.)

The Introduction To Technology: "Grade 8 Syllabus" includes this student performance objective with supporting competencies:

> Given an example of a new industry in each of the three areas of technology, students will describe how new technologies have created new jobs, ... then develop a training program to impart the broad-based skills necessary for employment in one of the career clusters.
>
> In order to do this, the student must be able to:
> a. Identify specific new jobs in each of the three areas of technology and their requirements.
> b. Identify major career clusters in each of the three areas

of technology.
c. List the transferable skills common to a career cluster (page 43.)

Two instructional strategies in this Syllabus are: "List careers and necessary training for people involved in service occupations" (page 30) and "Write a short career outline on medical careers which use new technologies to diagnose and treat medical problems" (page 31.)

A computerized system which allows students to obtain specific information about groups of occupations could be used for the above activities. Career information which is needed to help meet the goals includes:

Occupational titles
Occupational descriptions
Occupational groups
Skills transferability
Related occupations
New and emerging occupations
Sources of additional information
Training programs which train for occupations

Introduction To Occupations

This is a course required in ninth and tenth grades for all students planning an area of concentration in an occupational education area. Introduction To Occupations is described as: "part of a continuum of Occupational Education curriculum... designed to include instruction in all areas of Occupational Education" ("Curriculum Overview", page 1.)

The moving force behind the establishment of this course is:

> The New Part 100 of the Commissioner's Regulations, approved November 19, 1984, makes the following statement regarding occupational education curriculum:
> (h) Availability of occupational education. All public school districts shall offer students the opportunity to begin an approved occupational education sequence in ninth grade. For students graduating in 1989 and thereafter, each

> approved occupational education sequence shall include a minimum of one unit of credit in introduction to occupations, such instruction to be offered at any point in the sequence (page 1.)

The two purposes of this program are: "to develop transferable skills which can be used in later work or home responsibilities" and "to explore occupational interests and abilities prior to taking more specialized occupational courses" (page 1.)

Two modules, "Working Citizen" and "Personal Resource Management", are required of all students taking the course. In addition, two optional modules, to be chosen from the other twenty-two, are required. The general needs for occupational data defined in the "Curriculum Overview" will be discussed as well as the needs identified for the two required modules.

Of the seven process skills in the "Curriculum Overview", two directly relate to occupational information and career information delivery systems:

> Career Options
> Career selection is an ongoing process addressing a comprehensive plan of flexible alternatives to deal with educational needs, occupational needs, and life career needs. Career options include: identification of the interrelationship of goals; values clarification; evaluation of interests and abilities; and career investigations (page 5.)
>
> Decision Making/Problem Solving
> This includes the application of decision making/problem solving techniques and processes to work and personal experiences. Students will determine short-term and long-term goals, address immediate needs, and identify strategies for successful resolution (page 6.)

The goal of "Working Citizen" is "to introduce students to the realities of the working world."

Every working citizen should be able to manage information

> and utilize resources efficiently, while realistically assessing his/her own personal skills and limitations. Furthermore, this knowledge and skill should be applied appropriately in career and occupational selection, acquisition, and maintenance (page 2.)

The "Working Citizen" module contains five major topics, each of which "focuses on a specific area of information and personal development as it applies to the world of work (page 2.) The five topics in the module are "designed to provide students with information and experience which will help them make future choices concerning work" (page 2.)

Ten of the nineteen skill areas the student is expected to develop during this module relate to the use of career information. They are:

> 5. Assess personal skills and talents, relating them to individual choice of employment
> 6. Develop personal goals for education, training, and future employment
> 7. List and explain personal characteristics and qualities that are desirable for successful employment
> 8. Describe and utilize sources of employment information
> 9. Determine the relationship of education and training to acquisition and maintenance of employment
> 10. Identify at least two positions within two specific occupational fields of interest to the student, and describe the skills required for each position
> 11. Identify occupational positions that require advanced training
> 14. Analyze the working conditions of a chosen employment area, and explain the influence of working conditions on physical and mental health, as well as safety
> 16. Match personal job competencies with specific employment opportunities
> 17. Analyze the factors that influence individual job selection (pages 2-3.)

In the draft outline for this module, five of the major units require occupational and career information (pages 4-6.) In addition, its use is required to meet 'performance objectives/ supporting competencies' listed throughout the draft syllabus.

Although the "Personal Resource Management" module does not require the direct use of occupational and career information or career information delivery systems during instructional activities to meet the goals of the program, students are required to "identify personal goals" and to "relate resources to needs, wants, goals, and personal and career fulfillment" (page 2). Certainly, the availability of a computerized career information delivery system for student use, especially in obtaining wage and salary information, could be a benefit to instruction.

The other modules from which the students may choose deal primarily with career fields. Occupational and career information about these fields and how to prepare for a job in them could be put to good use by both the teacher and the student. In addition, a computerized career information delivery system could be used to assist students in selecting the optional modules which might meet their needs and interests.

The computerized presentation of career information, with routines which allow students to go through a structured search to find occupations which match their needs and interests; to obtain detailed information about occupations; to find occupations which are related to others; and to make comparisons between occupations would be helpful to both students and teachers.

Career information components which are directly related to the activities in the Introductions To Occupations curriculum include:

OCCUPATIONAL INFORMATION

Occupational titles
Occupational descriptions
Occupational groups
Job duties
Interests
Aptitudes
Temperaments
Earnings and benefits
Environmental and work site conditions
Physical demands
Physical activities
Entry level skills required
Education/training required and length of program
Related civilian occupations
Related military occupations and training
Sources of additional information
Job seeking skills
Values clarification
Interest assessment tool

EDUCATIONAL INFORMATION (Post secondary)

Name and address of institution
Types of institutions which offer various programs
Academic programs offered
Occupations for which programs train
Types of certificates/degrees and length of time to complete

GUIDANCE PLANS

In November 1984, by action of the Board of Regents of the State of New York, a new Part 100 of the Commissioner's Regulations was adopted which modified the original requirements for district guidance plans. "The Regulation requires each school district to develop a district guidance plan to serve students kindergarten through twelfth grade" ("District Guidance Plan," page 1.)

The Regulations state in Section 100.2 (j):

> (1) Public Schools. Each school district shall have a guidance program for all students...
> (ii) In grades 7-12, the guidance program shall include the following activities or services:
> (a) an annual review of each student's educational progress and career plans, which such reviews to be

> conducted with each student individually or with small groups by personnel certified or licensed as school counselors;
> (b) instruction at each grade level to help students learn about various careers and about career planning skills conducted by personnel certified or licensed as school counselors, or by classroom teachers in cooperation with school counselors;
> (c) other advisory and individual or group counseling assistance to enable students to benefit from the curriculum, to help students develop and implement postsecondary education and career plans,...
>
> (iii) Each school district shall develop a district plan which sets forth the manner in which the district shall comply with the requirements of this subdivision. The City School District of the City of New York shall submit a separate plan for each community school district, for the High School Division and for the Special Education Division. Such plan shall be filed in the district offices and shall be available for review by any individual. The plan shall present program objectives, which describe expectations of what students will learn from the program; activities to accomplish the objectives; specification of staff members and other resources assigned to accomplish the objectives; and provisions for the annual assessment of program results. The plan shall be reviewed annually by the school districts, and revisions shall be made as necessary.
>
> (2) Nonpublic schools. Each nonpublic secondary school shall provide a guidance and counseling program for students in grades 7-12.

The State Education Department issued guidelines to assist district personnel to develop "guidance plans which meet the needs of their students consistent with Commissioner's Regulation 100.2 (j)." ("District Guidance Plan, page 1.) In the Glossary, "Careers and ... career planning skills" are defined as

> the knowledge, understandings, and abilities related to the major guidance themes of self awareness/understanding, decision-making, planning, information gathering, values clarification and employability (page 4.)

The document further states that:

> "Guidance program for all students" includes the planned program activities and services of personnel to enable students to benefit from the educational program, to develop the knowledge, skills and abilities necessary to implement

> career plans, to assist in their personal and social development, and to develop problem solving skills and techniques (page 5); [and that] "Instruction at each grade level to help students learn about various careers and about career planning skills conducted by personnel certified or licensed as school counselors, or by classroom teachers in cooperation with school counselors" requires that counselors or classroom teachers must provide planned learning experiences to develop the career planning skills of students. This permits career education programs and activities to be delivered by other than counselors. It requires cooperation with counselors to assure a coordinated approach so that counselors, in their individual work with students, will reinforce the knowledge and skills gained in instruction in the personal career planning by the student. These experiences may be provided to groups of classroom size or smaller (pages 5-6.)

In the section of the guide which offers instructions for the plan, two of the program objectives for grades 7-12 relate directly to this review: (1) Advisory for Career Plans and (2) Counseling for Career Plans. The format for the plan sets forth five sections to be completed for each of the objectives.

A. Program Objective;
B. Target Population;
C. Expected Outcomes;
D. Annual Assessment of Program Results; and
E. Program Description (which includes):
  1. Activities;
  2. Target Group and Sub Group;
  3. Staff Assigned and Time;
  4. Other Resources Assigned; and
  5. Dates for Activities (pages 7-8.)

The guide offers suggestions for Section E, Activities to take place during grades 7-12 which might accompany an objective, "Instruction in careers and career planning." These activities include:

Self-evaluation (grade 7)
Use of career reference materials in library and Career Resource Center (grade 7)
Identification of job clusters related to student's own interests and abilities (grade 8)
Develop list of appropriate courses to be studied during the next school year -- keeping in mind tentative plans

for college major and/or career goals (grade 9)
Investigating education and training requirements for occupations identified in Self-Directed Search Survey form (grade 9)
Orientation session by counselor re: Guidance Awareness (grade 9)
Values Clarification exercise (grade 10)
Decision-making exercise (grade 10)
Self-awareness activities (grade 10)
Career-awareness activities (grade 10)
Group guidance sessions at which students are instructed re: factors important in choosing a college (grade 11)
Group guidance sessions re: preparing and updating a resume for college and/or potential employers (grade 12) (pages 27-31.)

Since guidance plans must be reviewed each school year, the guide offers suggestions for "student outcomes" which could serve as the basis for the review. Some of the suggested outcomes which are related to career planning and decision making are:

7th Graders will:

- o learn more about themselves by identifying their interests, abilities, aptitudes, values, and personal characteristics, and

- o be aware of their interests and of occupations related to their interests as derived from completion of a vocational interest inventory.

8th Graders will:

- o begin preparation of their personal educational plan;
- o understand that different jobs require different types of education and/or training;
- o understand the basic relationships between school subjects and eventual occupational requirements; and
- o identify related occupations for each subject they are studying.

9th Graders will:

- o understand that gathering information is an important step in educational and career planning, and
- o identify and list various types of information required.

10th Graders will:

- o recognize a number of ways in which occupations may be grouped.

11th Graders will:

- o set a long-range educational goal, and o develop a written action plan for reaching the goal.

12th Graders will:
o demonstrate effective job interview skills in a role-play situation (pages 43-44.)

The "Review Guide" which will be used by State Education Department reviewers in the formal review to determine compliance of district plans includes the following criteria for grades 7-12. The district plan will be rated on each of these areas as "Strong," "Average," "Weak," "Unsatisfactory," or "Not Applicable."

> 9. An ANNUAL REVIEW of each student's educational progress and career plans is conducted with each student individually or with small groups of students by personnel certified or licensed as school counselors.
>
> 10. INSTRUCTION AT EACH GRADE LEVEL to help students learn about various careers and about career planning skills is conducted by personnel certified or licensed as school counselors, or be classroom teachers in cooperation with school counselors.
>
> 12. Other ADVISORY ASSISTANCE to help students develop and implement postsecondary education and CAREER PLANS is provided by teachers or counselors, or be certified teaching assistants under the supervision of counselors or teachers.
>
> 17. Other individual or group COUNSELING to help students develop and implement postsecondary education and CAREER PLANS is provided by certified or licensed school counselors, or by certified or licensed school psychologists, or by certified or licensed school social workers in cooperation with school counselors (pages 46-47.)

It is obvious from reading Commissioner's Regulation 100.2 (j) that a wide variety of career planning information is needed to satisfy the intent and objectives as set forth. Certainly the availability of a computerized career information delivery system for use as a resource tool would be extremely useful. The State Education Department's Guide to school districts for developing their guidance plans make it clear that the schools must have information about careers available to students, counselors, and teachers. In addition, they must have adequate materials and systems in place which can support a broad range of actual career planning and decision making activities.

Although the need for and use of all types of career planning information are evidently needed to support the guidance activities required of each school district, specific information components include:

OCCUPATIONAL INFORMATION

Occupational title
Occupational description
Occupational groups or cluster
Interests
Aptitudes
Temperaments
Entry level skills required
Job duties
Education and training required
Related secondary school subjects
Related occupations
Job seeking skills
Links to published assessment instruments

EDUCATIONAL INFORMATION

High school areas of concentration
Name and address of colleges or training facilities
Admission requirements
Education and training programs offered
Occupations for which education and training programs train
Financial Aid information

THEORY, STANDARDS, AND RESEARCH

In 1951 the National Vocational Guidance Association (which is now the National Career Development Association) amended its definition of vocational guidance. The earlier definition stated that vocational guidance is "the process of assisting the individual to choose an occupation, prepare for it, and progress in it". This definition was changed to read "the process of helping a person to develop and accept an integrated and adequate picture of himself and of his role in the world of work, to test this concept against reality, and to convert it into a reality, with satisfaction to himself and society" (Herr and Cramer, 1979.)

Herr wrote that this new definition blended the personal and vocational dimensions of guidance and "focused on self-understanding and self-acceptance as the evaluative bases to which can be related the occupational and educational alternatives available to the individual" (Herr, 1980.) Hoyt emphasized the career education needs of the individual as

> the total effort of public education and the community to help all individuals become familiar with the values of a work oriented society, to integrate these values into their personal value systems, and to implement these values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual (Hoyt, 1974.)

There are many different vocational development theories, and much has been written about them. For the purpose of this discussion, we will consider Lawrence and McAdams' (1978) definition which places counseling development theories into three categories: individual-centered theories, sociological and economic theories, and accident theories. (Accident theories will not be examined here.)

Lawrence and McAdams categorized individual-centered theories in two areas: developmental and non-developmental. Vocational developmental theories, set forth by Ginzburg, Tiedeman, and Super, emphasize the individual's development of a self-concept and the decision making process which results in the individual's selection of an occupation. Holland's theory, on the other hand, may be considered non-developmental in that it focuses on the individual's identification of key traits and finding jobs that fit these traits.

The sociological and economic theories of vocational choice described by Datta emphasize the sociological context and environmental factors within which a person makes a decision rather that the decision making process itself (Datta, 1975.)

The person's need for career information in career decision making does not fit neatly into these theories. Even though the theories of vocational development are important in that they enable one to look at how people make decisions, it must be noted that there appear to be two gaps in the basic research: the absence of specification of occupational information which a person needs to make a choice, and the absence of a description of the process by which people combine information about careers with information about themselves to come to a choice.

Bhaerman wrote about the use of occupational information and computerized systems in career counseling:

> One of the most important--but also most neglected--methods of career counseling is the presentation and use of occupational information in decision making. Not only are career counselors often overwhelmed by the sheer volume of information that is available, but often they have difficulty in knowing how to impart it to clients... Computer-assisted occupational information systems have introduced a new and more interesting mode of presentation (Baehrman, et.al., 1982.)

There are many models for structuring career guidance activities. Gysbers (1983) identified seven phases in career decision making: (1) exploration; (2) crystallizaton; (3) choice;

(4) clarification; (5) induction; (6) reformation; and (7) integration (page 11). In discussing the career decision making steps in the formulation of an individual career development plan for students, he stated that:

> ...there is actually much interaction among the phases. There probably is a good deal of starting, stopping, going back, and repeating behavior. It is important to remember that the behaviors involved are learned; hence you (the counselor) may need to provide experiences for your clientele to help them adopt, adapt, or create a career decision-making approach that makes sense to them.

This advice makes a good argument for the inclusion of a computerized career information delivery system as a counseling tool to assist both young people and adults in the process career exploration and decision making. The question here is: What are the occupational and educational information components to be included in a system which will meet the needs of youth, secondary and postsecondary students, the unemployed, the incarcerated, entrants and re-entrants to the job market, people making mid-life career changes, military returnees, and others? Some specific needs of students have been discussed in the two preceding sections in relation to the new occupational education courses in New York State and the State guidance plan requirements.

Two relevant studies were conducted in New York State. Heller, Wheeler, and Gross investigated the need for, and interest in, computer-based guidance in secondary, postsecondary, and correctional institutions. They surveyed all community school districts in the State, excluding those comprising the New York City School System; 57 public and private two-year colleges, and eight Educational Opportunity Centers and correctional facilities.

They found that half the respondents from school districts were using an automated system during 1978-79 and that an additional 30 others, even though they were not using such a system, had experience with them. One-fourth of the postsecondary respondents were using a computer-based system for guidance. The computerized systems which were identified as being used at that time were CVIS, GIS, SIGI, Discover, and CIS.

One of the study results which has implications for the current investigation is the answer to the question about whether guidance specialists had an interest in a statewide system.

> Half of the respondents indicated that they would be interested in participating on one or more committees that we proposed to investigate topics associated with this endeavor. Most, of course, were interested in working on content issues--that is, what are the needed types of information; and fewest were interested in working out the hardware and communications configurations (Heller, Wheeler, and Gross, 1979.)

The second study was conducted for the New York Education Information Centers Program to "provide information useful in developing and implementing a computerized career information system whose primary service audience would be adults." One of the research activities, "to identify specific occupational, educational and related information needed by adults encountering a variety of career choice-making situations", has relevance for this study. The assumption is that these adults include those who are unemployed, are entering or reentering the job market, are making voluntary mid-life career changes or are displaced workers (Franklin and Mayall, 1981.)

The information components which were deemed to be necessary for adult career decision making were selected and grouped into three categories. Three panels assessed how well three systems (CIS, CBEOC, and GIS) could provide the needed information. The information components were:

OCCUPATIONAL INFORMATION

Structured occupational search strategies
Job description information
Job requirements information
Licensure and certification information
Education and training source information
Occupational outlook information
Job-seeking skill information
Earnings and fringe benefit information

POSTSECONDARY INSTITUTIONAL INFORMATION

General information
Cost and refund policy
Financial aid information
Information on admission requirements
Academic program information
Assessment of prior learning
Information on schedule flexibility
Information on institutional support services

NON-COLLEGIATE INSTRUCTION INFORMATION

Financial aid information
Union/apprenticeship training information
Adult basic education program information
Day care/evening care information
Information on support services for adult learners
Information on proprietary institutions
Assessment of prior learning (Franklin and Mayall, 1981.)

This information could also be useful to military returnees. People who have received job training in the military services also need to have information about civilian occupations which are related to the military occupations they may have held. A recent initiative by the Department of Defense has provided military career information for incorporation into computerized career information systems. They hope to encourage young people to consider the military services as a career. The Military Career Guide (1984) points out that "most military occupations are comparable to one or more civilian occupations because they require similar duties and training." Information about skills transferability from military occupations to civilian occupations is helpful both to youth choosing a career and to military returnees.

State Employment Security Agencies in every state manage the employment service and the unemployment insurance operations, which are designed to serve all citizens who are out of work and looking for work. Odell stressed that it is important for the employment service to possess and use good occupational labor market information in serving their clients, not only in the area of job placement but also in counseling and assisting clients to explore training opportunities. He pointed out that

> there are hundreds of thousands of people ... who need positive assistance including sound occupational and labor market information in order to survive and prosper in a changing world and a changing labor market.... High quality counselors with access to a full range of high quality occupational and labor market information are needed in the employment service and all employment and training agencies.... It is clear than an employment service which is competent to intervene on a large scale to provide vocational guidance and counseling services to youth and adults must have substantial occupational information capability of its own or must have ready and speedy access to some other agency's system if it is to intervene successfully in its role (Odell, 1981.)

One of the needs Odell stressed is for a computerized job bank system and a person-job matching capability. He also stated that the "employment service should have a reasonable comprehensive and current fix on the demand for labor in each local office and labor market area." In addition to the job bank and person-job matching information, he listed the types of information the employment service needs to support counseling, placement, and related activities. They included:

1. Occupational information concerning short- and long-term labor demand on a labor market area level.
2. Occupational information concerning short- and long-term labor supply on a labor market area level
3. An annual labor market area analysis of supply and demand by industry and occupation (Odell, 1981.)

Both adults and youth with handicapping conditions have special career information needs, and some of them need alternate delivery methods for computerized career information. Moriarity advanced the following issues in regard to the needs for vocational rehabilitation.

1. Occupational information dealing with the work setting, aptitude and related issues needs to become bidirectional, concerned with how jobs can be accommodated to individuals and not just the other way around.
2. In the "best situation," accommodation information would be an integral part of the occupational information system itself. Here a computerized data bank cross-referenced to job titles can be envisioned with continual updates as new information and technologies become available.
3. In addition, "exemplary practices" could be stored depicting how jobs may be accommodated to handicapped persons through restructuring, job sharing, use of flextime, and other management techniques.
4. The benefits from the above would accrue not just to handicapped person, but to generalized improvement in the understanding of the relationship between worker and job and the impact of accommodation on both (Moriarity, 1981.)

In the area of career counseling for vocational rehabilitation clients, the following information components were identified as being needed at both state and local levels:

Current occupational demand
Projected occupational demand

Expansion or reduction in occupational demand (into the future)
Replacement demand
Employment demand (localized by industry)
Occupational supply
Occupational characteristics

According to Moriarity, occupational characteristics are "probably the most valuable component for VR" and include:

Earnings and benefits
Job duties
Work settings and conditions
Abilities and aptitudes
Licensing/registration requirements
Education/training skill and precision patterns
Education/training requirements
Demographics of workers
Career ladders
Major employers
Hiring channels
Occupational titles and descriptions (Moriarity, 1981.)

Seigel and Buchanan (1981) stressed the need for very detailed and accurate data about the physical requirements of jobs for vocational rehabilitation career planning. They also stated that "This data must be presented in such a way that the requirements of the job can be related to information about the client.

For the midcareer physically disabled, McMahon recommended the use of occupational information in relation to three occupational choice factors: self-assessment, understanding the realities of work, and decision making (McMahon, 1981.)

Throughout the literature dealing with rehabilitation counseling for people with learning or reading disabilities, the point is made that the reading level must be such that the user can make maximum use of the materials or systems without being "shut out" by the information's high reading level.

During the counseling process, Moriarity saw "no more useful tool to client/counselor than a good occupational information system." On the issue of delivery of information to the people with visual and hearing impairments, he added "the computerization of occupational information paves the way to use this technology for alternative sensory display: print for the hearing impaired and audio (digital and synthesized voice) for the visually impaired" (Moriarity, 1981.)

Keim reported using videotape presentations in a career awareness program. The presentation of computerized vocational guidance information to people with handicapping conditions warrants special consideration by any group seeking to establish a system to serve them (Keim, Rak, and Fell, 1981.)

A study by the Florida State Occupational Information Coordinating Committee reiterated the need for the above information components and stressed the use of computerized systems for use in career counseling for physically handicapped individuals (Florida SOICC, 1981.)

Reardon discussed the use of computers to assist handicapped people to move beyond the stereotype that there are only a limited number jobs that they can perform.

> Many of these systems help users assess their interests and competencies, learn decision-making skills, and explore occupational information...They can empower a client to explore remote aspects of vocational behavior with the expenditure of little time or effort...Properly designed, these systems can remove some of the stereotypes that are barriers to handicapped persons' free exploration of occupational alternatives (Reardon, 1981.)

In recent years, there has been an emerging interest in women seeking to enter or reenter the job market. A November, 1985 issue of Ms magazine article identified categories of information useful for this group.

> If working women are going to find jobs for the future, they are going to need tools to help them...choose careers that will meet their needs and interests. (There are) three kinds of information needed to evaluate a particular occupation. First is the Costs of training and skill development and Benefits in salary and advancement opportunities of the occupation. The second focuses on Job Availability....The third (is) on-the-job Working Conditions (Mutari, 1985.)

The article also listed specific data categories within these broad headings:

Skills required
Training requirements
Where the training is available
Training costs
Salary ranges
Career Mobility
Number employed
Projected growth
Geographic concentration
Traditional/pathbreaking (information about occupational segregation by race and sex)
Occupational interest groups: professional organizations
Work schedules
Degree of supervision
Contact with public: with coworkers
Control or pace of work
Physical mobility
Health and safety (environmental conditions)

In her book, Re-Entering, Berman suggested that women need more than good occupational information. They need professional career counseling to help them sort out their needs and values; a workable career plan; and job seeking skills, such as resume' writing and interview techniques (Berman, 1980.)

In an effort to make computerized career information available to the general public, but especially to all adults, several operators of CIDS programs have placed their system in public libraries. "The San Bernadino, California Public Library reports a 'tremendous success' to the introduction of its Eureka computerized data base" (Library Journal, November, 15, 1982.) The Georgia Career Information System is being used extensively and successfully by people in the Atlanta Public Library (Library Journal, March 1, 1982.)

In a recent article, "Matching Yourself With the World of Work," Fountain stated that it is helpful for career choosers to know as much as possible about what an occupation demands. He presented a guide for exploring occupations and comparing job characteristics with the reader's interests and skills. The guide listed 16 occupational characteristics related to more than 250 occupations. The characteristics he listed as important for exploration and comparison are:

JOB REQUIREMENTS

Leadership/persuasion
Helping/instructs others
Problem solving/creativity
Initiative
Work as part of a team
Frequent public contacts
Manual dexterity
Physical stamina

WORK ENVIRONMENT

Hazardous
Outdoors
Confined

OCCUPATIONAL CHARACTERISTICS

Jobs concentrated geographically
Part-time
Earnings
Employment growth
Entry requirements (Fountain, 1982.)

Sum and Harrington wrote about the occupational information needs for CETA program operations. Even though CETA has been replaced by JTPA (the Job Training Partnership Act), the information needs for counseling and placement of employment and training program clients have not been replaced. They addressed the total information needs for all aspects of the CETA program, but some of their comments have direct bearing on "counseling and guidance to job-seekers." They state that:

> CETA ... program managers must have access to timely and reliable information on labor force, aggregate employment and industrial and occupational employment developments in their planning and local labor areas.... Information on aggregate employment levels and trends in local labor areas as well as information on growth industries and the occupational staffing patterns of local growth industries to allow ... for the provision of institutional and OJT training; information on the hiring requirements and hiring policies of local firms to design appropriate curriculum for training programs and to provide relevant occupational counseling and guidance to job-seekers; and information on the hiring activities of local firms to facilitate the job placement of terminees from ... employment and training programs (Sum and Harrington, 1981.)

Baker discussed some of the information needs of the Job Training Coordinating Council (JTCC) in Kentucky. The information he said the JTCC needs there is obviously needed in most states. Among the questions he raised relating to program planning and counseling operations are:

> What occupations are in demand?
> What training should be provided for the economically
>   disadvantaged or dislocated worker population?
> What are the characteristics of the labor force as a whole,
>   particularly the economically disadvantaged?
> How many persons are trained?
> How many of these receive jobs? (Baker, 1984.)

Even though the needs for specific information components of JTPA clients are not significantly different from other people in their age groups, it must be remembered that they often have educational and social disadvantages that which be taken into account when considering their career decision making process needs.

New York State has a training program for dislocated workers which provides these workers up to $1,500 in tuition assistance for approved training programs. According to DeFabio the State legislation which established the program provides that the

> Commissioner of Labor produce a list of occupations likely to be available in the state for the next three years.... The dislocated workers are provided with a list of the 27 occupations in which the average annual openings are expected to exceed 1,000 for the next three years, according to OES projections (DeFabio, 1984.)

The need of these workers for other types of information concerning the occupations was not addressed in the legislation, but it is certain that they would benefit from having additional information about their potential new jobs.

Admittedly, certain population groups certainly need specialized types of occupational and education and training information to aid in career decision making, there are many aspects of the process that hold true across all groups. Maze and Cummings pointed out that "Since choice points occur several times in each person's life and since they are spaced so far apart in time, one of the most effective ways to assist clients is to teach them the career planning process."

They list five steps in the career planning process:

STEPS	POSSIBLE ACTIVITIES
I. Personal Review	Analysis of past experience Career path assessment Identification of needs
II. Assessment	Goals Values

	Interests
	Personality
	Skills
	Aptitudes & Abilities
	Motivators
III. Decision Making	Identify options
	Gather information
	Assess desirability of options
	Assess risks
	Select goal
IV. Planning	Assess skills needed
	Identify training opportunities
	Identify resources for job openings
	Outline plan
V. Implementation	Education or training
	Volunteer, temporary, or part time jobs
	Professional organizations
	Personal development workshops
	Networking
	Job search (Maze and Cummings, 1982.)

The remaining portion of this section will focus on recommendations for information components to be included in computerized career information delivery systems which can aid in the overall career planning process.

A North Carolina Study identified labor market information needs for seven education and training related activities. One of those was "vocational or career counseling". The state agencies surveyed were: Public Instruction, Community Colleges, CETA, Vocational Rehabilitation, and the Employment Service. The data elements which were ranked either "of critical importance" or "of above average importance" for vocational or career counseling by three or more agencies include:

CHARACTERISTICS OF TYPICAL JOB

entry wage rates
average wage rates
job duties and responsibilities
working conditions and hours
linkage with other jobs
hiring channels customarily used

licenses, accreditations, certificates required
apprenticeship opportunities
training opportunities
fringe benefits

EMPLOYMENT PATTERNS

seasonal
temporary
permanent
full-time
part time

JOB OPENINGS

by industry
by occupation
by occupational cluster, etc.

EMPLOYMENT REQUIREMENTS

CHARACTERISTICS OF WORKERS

traits and qualities generally associated with employer acceptance

OCCUPATIONAL MOBILITY

EDUCATION AND TRAINING PROGRAM CHARACTERISTICS

program title
program description
eligibility requirements
identification of program providers
budget
support services offered
financial aid (Probst, et.al., 1979.)

In a career information system feasibility study for the State of Illinois, Rath identified virtually the same information components as being needed for a state-wide system there (Rath, Jacobson, and Grabowski, 1980.)

Since 1981, NOICC, in cooperation with the U.S. Department of Labor, Employment and Training Administration, and the Department of Defense have funded states to conduct a series of local training workshops on "Improved Career Decision Making

Through the Use of Labor Market Information" (ICDM). These workshops are conducted to assist counselors in learning where to find and how to use labor market information to help their clients make career decisions that reflect the realities of the labor market.

The categories of labor market information which are discussed during these ICDM training sessions include:

Occupational activities
Occupational characteristics
Preparation for work
Job advancement
Related occupations
Industry information
Employment outlook
Earnings
Places of employment.

The workshops are designed for counselors working in high schools, the Job Service, JTPA (formerly CETA) programs, vocational rehabilitation centers, and community and technical colleges, as well as other agencies which offer counseling services in a state.

In 1977, The U.S. Department of Labor issued a framework of standards for the development of "systems to provide career information to person who are in the process of career exploration and decision making." In relation to information to be included, the publication states:

> People who are in the process of career exploration and decisionmaking need a great variety of occupational, educational, and training data and information. An ideal system should contain descriptive materials (about)...:
>
> OCCUPATIONS
>
> DOT codes...or combinations.
> A description of duties or tasks (nature of the work).
> A description of special tools, equipment, or instruments

used on the job.
Identification of other occupations that have similar skill or knowledge requirements (skill transferability).
Opportunities for promotion or career advancement.
Information on hiring channels.
Working conditions (indoors or outdoors, work week and schedules, and working conditions such as stress, physical settings, safety, etc.)...

REQUIREMENTS OF THE OCCUPATION

- Personal requirements
  - Interests
  - Aptitudes
  - Abilities
  - Physical qualities that can be related to characteristics of the occupation...
- Preparation requirements
- General education.
- School subjects and courses of study.
- Special training or education.
- Work experience.
- Other requirements:
  - Licensing or certification information.
  - Information on associations or unions.
  - Information on examinations...
  - Information on special requirements, such as citizenship, language, etc.

ECONOMIC INFORMATION ABOUT THE OCCUPATION

- The number of workers in the occupations and related data--industry employment, geographic distribution, self-employment, etc.
- Descriptive outlook information
  - Projections of demand
  - Supply
  - Relationship between supply and demand
  - Factors that affect outlook...
- Information and data on earnings
  - Beginning earnings
  - Average earnings
  - Ranges
  - Information on fringe benefits...
- Information on costs to workers: union membership, tools, and equipment, etc (U.S. Dept. of Labor, 1977.)

The basis for the recommendations for the inclusion in a computerized career information delivery system of the information components listed above are based on the findings of the seminal work by McKinley in 1974 in developing a computerized career information system in Oregon. It is safe to say that most of the computerized systems in use today are organized around McKinlay's design. For that reason, one will find, in general, similar information components in most of the computerized career information delivery systems being used today.

The Association of Computer-Based Systems for Career Information (ACSCI) has issued a publication dealing with standards for career information delivery systems. The document deals with criteria to be used for the establishment of a high-quality system which meets the needs of a broad base of users. The standards in the publication deal with the all aspects of the development and delivery of computerized career information. In this section, those standards which deal with information are reviewed.

The ACSCI standards identify the following information components as necessary in a career information delivery system:

> Information which describes the occupation should be adequate to give a complete description and should include:
>
> The occupational title and an identifying code.
> The primary job duties of the occupation should be described.
> Abilities required for worker success in job.
> Skills transferability of an occupation.
> Information about related occupations.
> Working conditions of the job.
> Equipment, tools, or instruments used on the job.
> Wage information which includes beginning salary; average salary for experienced workers; salary ranges; fringe benefits; cost to workers for union membership, etc, all of which are presented consistently.
> Employment outlook information and the relationship between supply and demand.
> Interests.
> Aptitudes.
> Physical qualities.
> Preparation requirements.

Licensing, certification, or examinations required for entry.
Opportunities for special groups, such as minorities and handicapped should be included.
Common methods of entering the occupation.
Career ladder and advancement information.
Apprenticeship information.
Location of educational institutions where training can be obtained.
Financial aid information
Job search information
Education and training information specific to the needs of special populations should be presented (ACSCI, 1981)

The National Occupational Information Coordinating Committee (NOICC) has issued "Career Information Delivery Guidelines" for State Occupational Information Coordinating Committees (SOICCs) to use for the development, delivery, and use of career information. The section of the Guidelines which address the information files states the "a system should develop information which adequately describes the occupation." The recommended contents of the information files include:

OCCUPATIONAL INFORMATION FILE

Descriptive information about both civilian and military occupations, such as:
  Definition of the occupation;
  Job duties;
  Working conditions; and
  Career ladders.
Requirements of the occupation, such as:
  Education and experience required for entry;
  State and local licensing requirements;
  Interests;
  Abilities; and
  Temperaments.
Economic information about the occupation, such as:
  Earnings;
  Employment;
  Industrial concentration;
  Sources of labor supply;
  Employment outlook; and
  Supply and demand analysis.

EDUCATION AND TRAINING INFORMATION FILES

Postsecondary educational programs;
Educational institutions (schools and colleges;
Military training;
Apprenticeship;
School subjects; and
Financial aid information (NOICC, 1985.)

In addition to discussions in the literature about career planning information needs, two topics have emerged which should be mentioned here. These deal with entrepreneurship and new and emerging occupations.

An interest in entrepreneurship has always been a part of some peoples' career planning. This has grown rapidly in recent years and is expected to continue to increase. Cetron points out:

> In 1950, fewer than 100,000 new businesses took form, compared with 700,000 in 1983. Self-employment has hit boom times as well. After a 20-year decline, the number of people self-employed increased by 25 percent during the 1970s and probably will double in the next decade.
>
> We predict the movement into the Information Age will provide a fertile environment for entrepreneurs...Look for new business formation to boom and, with it, look for some very successful, very happy and very rich young business owners (Cetron, 1985.)

A career information delivery system which is designed to meet the needs of these potential "young business owners" (and older ones as well) should include information about the types of occupations and training programs most likely to lead to entrepreneurship and self-employment as well as personal traits which entrepreneurs should possess.

Another topic which appeared in the literature with increasing frequency is "new and emerging occupations;" also referred to as sunrise occupations, jobs of the future, or new technologies. According to Cetron (1985), it is important to understand trends in future job growth and to develop personal forecasts. "The Information Age that is so drastically altering our workplace also can give the average individual information to help him or her shape a safe, sane and reasonable future."

Borchard (1984) pointed out that "Career planners need to tune in to the future if they are to remain equipped to assist today's career choosers and charters." He assessed current computerized systems as "inadequate sources of job information" for people who want to train for careers which will be in demand into the next century. "Most counseling tools are showing their age when it comes to assisting people with career planning toward the year 2000."

Professional labor economists and come others who are writing about the labor market today are saying that the needs and make-up of the labor force in the near future will be significantly different in some work areas from today's. If a computerized career information system is to be of maximum use to those it is intended to serve, it must be designed to include information about new occupations, the changing needs of the labor market, and have the ability for new types of information to be incorporated. In his article, "Careers of the Future," Wolkomir (1985) pointed out that "in an age of rapid advance, careers are likely to change as frequently as the technology on which they are based," This would make even more important the contention that people need not only information but also career planning skills which they can use again and again.

It is interesting to see what is being written about future jobs. Wolkomir listed ten job categories which, in the long-term, will be doomed to obscurity and ten on the rise. He stated that those jobs on the way out include: factory workers; clerks; middle management, income-tax specialists, computer programmers, air-traffic controllers; other professionals; farm laborers; lumber jacks; and fast-food workers. He cited the rise in intelligent computer software and the use of robots as two causes for the decline. The ten "on the rise" in the long-term are: fire-protection engineers; database managers; aquaculturists; laser technologists; space technologists; professional humanists; digitechnicians; educationists; geriatricians; and artificial-intelligence engineers.

Bolles, however, reminds us that as we plan for the future, we should not forget that "there will be constancies as well as change...constancies which will be transported untouched and unchanged into our future". He lists several types of workers which represent these constancies which include those who make our shelter for us; those who repair out vehicles and appliances; and those in service occupations. Even though the skills these workers need may be different from present skills required because of changing technology, the personality types of the people who will be attracted to these jobs is likely to be the same.

Bolles recommends "life/work planning" which will allow people to take stock of what within them is constant and what has changed and to apply that information to the labor market. He lists seven major categories of information to be considered as a "constant or change" when a person engages in the activity of "life/work planning." These are: geography; goals; special knowledge; people environments; working conditions; level and salary; and transferable skills (Bolles, 1983.)

The purpose of this review has been to investigate the information component needs of users of a computerized career information delivery system for the State of New York. Several interesting facts emerged during the review. No single book, article, or other source addressed all the issues relating to the use of occupational and educational information in career decision making and in connection with computerized career information delivery systems. It is interesting to note that the literature which dealt with theory, for the most part, did not deal with information needs. On the other hand, in general, those articles which recommended a wide range of career decision making information tended to avoid any discussion of theory. Research which would directly link theories of career decision making with information needs has been neglected and needs to be undertaken. However, a consistent range of occupational and educational information components did emerge from this review. A list of the components can be found in the chapter summary.

Design Considerations for a Computerized Career Information Delivery System

There are only a few publications which discuss standards for and issues related to the design of computerized career information delivery systems. One of the earliest to begin to address this issue is the 1974 publication by McKinlay, which listed the "necessary features of an information delivery system for career planning." He characterized "an ideal occupational information delivery system" as one that can:

1) Make information accessible to persons of varying ability and experience.
2) Provide a means for integrating occupational information with clients' interests, values, aptitudes, and abilities.
3) Use the media that are most appropriate for the particular finds of information.
4) Display and/or deliver information in an attractive manner.
5) Provide accurate and current information, including capacity for updating.
6) Supply local as well as national data.
7) Provide information concerning a wide variety or occupational groups.
8) Include such specific information as: (a) job duties, (b) work environments, (c) hiring and training requirements, (d) terms of employment, (e) hours, (f) current labor market situation, and (g) long-range outlook (McKinlay, 1974.)

In 1977, a U.S. Department of Labor, Employment and Training Administration bulletin discussed the delivery component of a career information system. Even though these standards were published nine years age, they still are very relevant to the developer and user of computerized career information delivery systems today.

> The delivery of career information to users includes two broad functions, accessing and dissemination. Accessing is the strategy or approach used by the individual to search

> out and explore information. Dissemination is concerned with the provision or availability of the information for a wide variety of users (U.S. Dept. of Labor, 1977.)

This publication set forth "operating standards for accessing and dissemination [which] should be met by a career information system." These include:

> - The delivery system should be demonstrably effective with persons of varying ability and experience.
> - System components should be user-operable so that independent usage may be fostered....The client will need little or no assistance in using them.
> - A booklet or set of instructions on how to use the various components should be available to clients using the system.
> - Varied media should be used to disseminate information. ... The various media, however, should be components of an integrated delivery system.
> - Hardware components required should be standard equipment that is reliable, widely available, and applicable to a variety of users.
> - The delivery system must be able to provide a copy of a summary of its basic information to the user.
> - The delivery system should be able to house all information related to the topics listed for information development, including localized information.
> - The system must have an updating capability so that new information can be entered into the system and made available to users within at least 6 months of the time it becomes available.
> - The user should be able to obtain the information desired before leaving the system.
> - The accessing strategies or approaches used to obtain information should be available both in a "direct access" and a "structured" search mode.
> - The delivery system should be available as part of the counseling and instructional processes.
> - The system should be as accessible as possible for use throughout all or most of a user agency's regularly scheduled day.
> - Costs for the delivery system should be at a level per user which will make it feasible for the user agencies or local or State governments to support them financially (U.S. Dept. of Labor, 1977.)

The NOICC Guidelines stated that accessing strategies for a computerized career information delivery system should include both:

- Direct search - This is a method for users who know the name of a specific record: e.g., school or occupation, and use the name to "look up" and obtain information on this record by using a file title index.
- Structured search - This is a method for users who do not know which record (usually an occupational title) to explore. The structured search provides such users with a sorting mechanism by which they may identify and record their personal preferences and obtain a list of related occupational titles to explore (NOICC, 1986.)

The Association of Computer-Based Systems for Career Information (ACSCI) also has issued standards for a computerized career information delivery system. These include:

- The delivery system should be demonstrably effective with persons of varying ability and experience.
- The delivery system should present information in an attractive and interesting manner so as to motivate users to continue use of the system and to further explore occupational areas.
- The delivery system components should be user-operable so that independent usage may be fostered.
- The system should provide user agencies with booklets or sets of instructions on how to use the various components for distribution to users. Such instructions should include directions for operating the various hardware components and descriptions of the information files available in the system. The instructions should be written at a reading level appropriate to a wide variety of intended users.
- The statement made in one medium should be consistent and compatible with those made in other files or media.
- Any delivery system hardware components required should be standard equipment that is reliable, widely available, and applicable to a variety of users.
- The delivery system must be able to provide a copy of a summary of its basic information to the user for future reference.
- The delivery system should be able to house all information related to the topics listed for information development, including localized information.
- The system must have updating capability so that new information can be entered into the system and made available to users within at least six months of the time it becomes available.
- The user should be able to obtain the information desired which is available through that medium of delivery before leaving the system.
- The accessing strategies or approaches used to obtain information should be available both in a direct access and a structured search mode depending on the preferences of

the user.

- o If the accessing strategy provides for the use of a client's records (e.g., test scores, class rank, interest inventories, etc.,) the client should be aware of all test scores and personal records which are input into the system.
- o The delivery system should be available and accessible to adequately serve the user site.
- o Costs for the delivery system components should be at a level per user which will make it feasible for user agencies or local or state governments to support them financially (ACSCI,1981)

The earliest developed computerized career information delivery systems operated on mainframe computers. Later, some of these same systems along with some newly designed systems operated on a minicomputer. Now, with the advent of micro-computer technology, and with many systems being available for operation on the microcomputer, there are several types of computerized delivery for systems to be considered.

At a 1981 conference on "Technology for Career Information Delivery" the advantages of the microcomputer were discussed by several presenters. Williams pointed out that the most obvious advantage of the microcomputer is cost.

> It is considerably cheaper to go with a micro computer version [of a state-wide system] that involves the local's buying and accessing their own equipment rather than running through a central mainframe that requires administrative support.... There is also the advantage of convenience [to the user] since there are many programs that can be used in addition to the [CIDS] software program, which make the computer more cost-effective than the mainframe (Williams, 1981.)

At the same conference, Beisse stated that the microcomputer offers several advantages over other technologies.

> The initial cost of a floppy disk system is competitive with the cost to an agency of the annul lease of a computer terminal and the costs of accessing [the CIDS] on a time-shared minicomputer. Where a time-shared computer is accessed over long-distance telephone lines, or where computer charge rates are high, stand-alone microcomputers

> can offer substantial economies, especially over a three- or four-year period.

He did point out, however, that "microcomputers are not without their drawbacks," one of which involve the cost of hardware for a system which requires hard disk capability to operate (Beisse, 1981.)

In looking at the needs of the State of New York, it is certainly essential to determine the best and most cost-effective delivery mode for a computerized career information delivery system.

Although the next topics are not a function of the computerization of information components, they are indeed crucial to the initial and continuing successful use of a computerized system in any setting. Their importance warrants their being mentioned here.

System support services and training are important components of a system if the information in that system is to be of maximum benefits to the clients of a school or agency. Thompson and LaRochelle (1985) identified the problem of counselors' not using computerized systems because they are not familiar with their use. They concluded:

> Thus, in-service training that emphasizes the variety and strengths of the various information files, particularly the newly developed local files, and that provides counselors with creative strategies for incorporating the system into their counseling efforts, is necessary for the establishment and effective functioning of a comprehensive career information system.

In discussing the information competency required of counselors in the National Vocational Guidance Standards, Whitfield (1985) stated that "Counselors and counselor trainers need to know more about career information and career guidance." He further stated that two of the sub-areas of the information competency deal with career information and career information delivery systems. They are:

1. Knowledge of education, training, employment trends, labor market, and career resources that provide information about job tasks, functions, salaries, requirements, and future outlooks related to broad fields.
6. Knowledge of strategies to store, retrieve, and disseminate vocational/career information.

Perlmutter (Bloch) and Maze in their chapter on implementing career information systems in the book Microcomputers and the School Counselor edited by Johnson (1983) stress the importance of initial and ongoing training for counselors and aides to counselors who will be using the system. In planning for system implementation, they urge that resources be allocated both for initial and on-going staff development.

Therefore, the availability and quality of initial and on-going training for counselors and support staff on the information components along with the use and uses of a computerized career information delivery system must be considered as an important part of a system.

Summary

Information Components and Design Considerations for a Computerized Career Information Delivery System

Information components are included in the summary of this review if they meet one or more of the following criteria:

-the data element is required to meet the needs of the New York curricula for "Home and Career Skills" (for students in grades seven and eight); "Introduction To Technology" (for students in grades seven and eight); and "Introduction To Occupations" (for students in grades nine and ten);

-the information component is required to fulfill the requirements of the Commissioner's Regulation 100.2 (j) for district guidance plans; and/or

-the information component is recommended in relevant literature for use in the guidance process, with special consideration given to populations with special needs, such as unemployed adults and people with disabilities.

During the review of the literature, it became evident that some structure for presenting the findings related to information components and system design considerations was needed. In some instances the information and system needs expressed by the authors were not discussed in terms of categories. Some authors were not specific in their definitions of information components, and others categorized the information differently. Several authors implied that certain types of information was needed, but did not name them specifically. Since it was necessary to impose a structure on this variety of information, the broadest possible categories for a computerized system were identified. In all cases, responsibility for the decision to include or not to include information components or design considerations rests solely with the authors of this study.

I. OCCUPATIONAL INFORMATION

A. Information Components Related to Specific Occupations

1. Occupational title with identifying code
2. Occupational description
3. Occupational group or cluster
4. Job duties
5. Interests (of workers as validated in various studies)
6. Aptitudes
7. Temperaments
8. Entry level skills required for job
9. Physical demands (amount of weight the worker must lift or carry)
10. Physical activities
11. Tools, equipment, etc. used on the job
12. Environmental/work conditions
13. Hours of work and travel required on the job
14. Industries in which occupations occur (places of employment)
15. Hiring channels
16. Career ladders and advancement opportunities
17. Occupational outlook
18. Current and future occupational supply and demand (numbers for each)

19. Current employment (numbers, by occupation by industry)

20. Earnings and benefits
    (beginning, average, range, fringe benefits)

21. Education/training required

22. Licensing, certification, tests, etc. required

23. Helpful secondary school subjects

24. Related occupations

25. Related military occupations

26. Sources of additional information

B. Information Components Related to Labor Market Entry

27. Job seeking skills

28. Self-employment and entrepreneural information

II. EDUCATIONAL AND TRAINING INFORMATION

A. Information Components Related to Secondary Areas of Concentration

29. Area of concentration description

30. Area of concentration group or cluster

31. Typical course work

32. Types of learning activities

33. Skills and knowledge acquired

34. Related entry level occupations

35. Related occupations requiring further study

36. Related post-secondary programs

B. Information Components Related to Post-Secondary Educational and Training Programs

37. Program description

38. Program group or cluster

39. Typical course work

40. Types of learning activities

41. Skills and knowledge acquired

42. Certificates or degrees earned

43. Normal length of time to complete certificate or degree

44. Related occupations

45. Related programs of study

46. Type(s) of institutions offering program

C. Information Components Related to Educational and Training Institutions

47. Name and address of educational or training institution

48. Geographic location

49. Type of institution

50. Admission Requirements
(test scores, application procedures, application deadline, fees, physical exam, etc.)

51. Name and address of admissions contact person

52. Cost (in-state and out-of state tuition, room, board, fees)

53. Housing
(availability, on-campus, off-campus, freshmen requirement percent of undergraduates living on campus, etc.)

54. Financial aid information
(sources, application procedures, application deadline, average award)

55. Name and address of financial aid contact person

56. Education and training programs offered

57. Types of certificates or degrees awarded

58. Normal length of time to complete certificates or degrees offered

59. Special programs available
(cooperative education, adult basic education, foreign study, ROTC, etc.)

60. Library and learning center facilities information

61. Support services available
(counseling, learning lab, tutoring, placement)

62. Services for handicapped
(housing and building access, designated parking, counseling, interpreters for the deaf, learning aids, registration assistance, tutors, transportation for the mobility impaired)

63. Intercollegiate sports offered
(by sex and availability of scholarships)

64. Accreditation information

D. Information Components Related to Major Sources of Financial Aid and Scholarships

65. Name

66. Eligibility requirements

67. Application procedures and deadline

68. Size or basis of award

69. Name and address of contact person

70. How to obtain additional information

III. SYSTEM DESIGN CONSIDERATIONS

71. Interactive structured search of occupations by such elements as: interests, temperaments, values, skills previously acquired, etc.

72. Ability for users to query the system as to why specific occupations did not appear on their lists

73. Direct access to information about occupations

74. Direct access to information about secondary areas of concentration

75. Direct access to information about post-secondary educational and training programs

76. Interactive structured search of educational and training institutions

77. Direct access to information about educational and training institutions

78. Ability to match institutions and educational programs

79. Links to published assessments

80. Ability to use occupational characteristics to sort for similar occupations

81. Interactive structured search of financial aid information

82. Ability of the system to operate on a microcomputer

83. Ability of clients to walk away from a session at the computer with a printed record of searches and information received

84. Ability to add state specific occupational and educational information to existing records

85. Ability to create records for new and emerging occupations and training programs

Chapter Three
METHODOLOGY

Introduction

In this chapter, the methodology for the evaluation of computerized career information delivery systems will be detailed. The study sought to answer several related questions. The first question was: "What is needed in a computerized system to meet the career information needs identified for New York State?" The second question was: "What systems are already being used in the State, how effective and well liked are they by their users, and what gaps are there in those systems?" The third was: "What can vendors of systems offer New York State to help meet its needs?" Fourth: "How much will that cost the State, comparatively?" The final, and ultimate, question was: "Given the answers to the four questions, what steps should the State take to adopt or develop one or more career information delivery systems to provide national and State information to the broad-based user community?"

To answer these questions, five major activities or sub-studies were carried out. They were:

1. The Information Validation Survey. Information components and design considerations which were identified through the review of the literature were presented in a survey instrument with a Likert-type scale ranging from

"highly desirable" to "highly undesirable." These instruments were sent to a national panel of experts in career guidance and a state panel of experts in guidance and occupational education.

2. The Surveys of User Satisfaction. Surveys to determine the degree of satisfaction with systems in use as well as the overall needs and uses for a system were constructed for principals, counselors, students and parents. A selection of schools throughout the State using CIS, GIS, CHOICES, Discover, SIGI, and C-LECT were surveyed.

3. Site visits. Selected schools and agencies using the major systems were visited to obtain information about the uses of and satisfaction with systems through in-depth interviews with counselors in those sites.

4. Request for Information from vendors. Based on the results of the Information Validation Survey, the Surveys of User Satisfaction, and the site visits, a request for information regarding system components and costs was developed and sent to the vendors identified as active in New York State.

5. Demonstration of CIDS to the System Review Panel. The same vendors were invited to make a structured presentation to a panel of guidance, occupational education, rehabilitation, and labor professionals both from State government and local agencies and schools. A rating instrument was designed with a Likert-type scale for the System Review Panel's evaluation of the systems.

For each of the above, details of instrumentation, population, and analysis will presented in this chapter.

Information Validation Survey

The purpose of the Information Validation Survey was to ascertain the extent to which the information components and design considerations identified in the review of the literature were valid.

INSTRUMENT

A review of the literature was conducted to identify the information components and system design considerations which would meet the needs of the implementation of the New York State occupational education curricula, "Home and Career Skills" "Introduction to Technology", and "Introduction to Occupations," the implementation of the guidance plans, and the needs of the various populations making career decisions. The review included an analysis of the curricula, the guidance plan guidelines, standards promulgated by professional organizations, and other writings.

From this review, 85 separate elements were identified. For ease of understanding, they were grouped under three major headings: occupational information, educational and training information, and system design considerations. Each of these major headings was further sub-divided into appropriate topics. Under occupational information, the headings included information components related to specific occupations, such as job duties, entry level skills required for the job, occupational outlook, earnings and benefits, and information components related to labor market entry.

Under educational and training information, the first sub-component related to secondary areas of concentration, including such items as typical course work and related entry-level occupations. The second sub-heading related to post-secondary educational and training programs and had similar information items. The third sub-heading related to educational and training institutions, and the fourth to sources of financial aid and scholarships.

The third major section was system design considerations and included items related to the structure, rather than the content, of a career information delivery system.

Since the respondents were asked to evaluate the items in relation to the new occupational education curricula and the district guidance plans, excerpts from these documents were included with the survey.

The respondents were asked to rate each item as highly desirable, desirable, neither desirable nor undesirable, undesirable, or highly undesirable by circling the appropriate number. Respondents were also given the opportunity to comment on or make additions to any of the items on the survey. The Information Validation Survey, the excerpts from the curricula and guidance plan guidelines, and related cover letters are attached as Appendix I.

POPULATION

The survey was mailed to a national panel of experts and a state panel of guidance and occupational education professionals.

The national panel was selected from those who have made major contributions to the field of career development and have been active in the major organizations related to career development including the Association of Computer-Based Systems for Career Information, the National Career Development Association, and the American Vocational Association -- Guidance Division. Some of their many accomplishments are described below. Each has won many awards and has published extensively in the field.

The national panel consisted of the following people:

-Dr. Norman Gysbers, currently professor of educational and counseling psychology at the University of Missouri; previously president of the National Career Development Association and the American Association for Counseling Development, and editor of the *Vocational Guidance Quarterly* and *The Journal of Career Development*.

-Dr. L. Sunny Hansen, currently professor of counseling and student personnel psychology at the University of Minnesota and president of the National Career Development Association; previously editor of *The School Counselor* and a Fulbright Scholar.

-Dr. Edwin L. Herr, currently professor and head of the Division of Counseling and Educational Psychology at Pennsylvania State University; previously president of the

American Association of Counseling and Development, National Career Development Association, and the Association for Counselor Education and Supervision, and editor of several professional journals.

-Dr. Kenneth Hoyt, currently University Distinguished Professor at Kansas State University; previously the Director of the Division of Career Education, U.S. Department of Education, president American Association for Counseling and Development, and editor of Counselor Education and Supervision.

-Dr. Cynthia S. Johnson, currently associate professor, Department of Higher and Adult Education, Teachers College, Columbia University; previously president American College Personnel Association, member of the editorial board of Career Planning and Adult Development Journal, and principal investigator of research on the career decision making of women and minorities funded by the W. W. Kellogg Foundation.

-Carol J. Kososki, currently director, South Carolina Occupational Information System, president of the Association of Computer-Based Systems for Career Information, and winner of the National Occupational Information Coordinating Committee Director's Award for Outstanding Contributions for the Improvement of Occupational Education in the United States.

-Dr. Evelyn J. Lavaty, currently coordinator of Career Guidance and Counseling, director of Rural Education, Nebraska Department of Education, chair of the State

Supervisors of Career Guidance Network, member of the American Vocational Association -- Guidance Division Policy Committee, and volunteer occupational therapist in a Veteran's Hospital.

-Dr. David B. Tiedeman, currently president of the International College and vice president of the LIFECENTER Foundation; previously professor of Education at the University of Southern California, Northern Illinois University, and Harvard, director of Project TALENT, president of National Career Development Association, Division of Counseling of the American Psychological Association, and National Council of Measurement in Education.

STATE PANEL

A state panel was sought to respond to the Information Validation Survey that would include the major groups interested in the final product -- a computer-based career information delivery system -- and that would have knowledge of the kinds of career information needed by the groups to be served.

The Information Validation Survey was sent to 122 people, including:

-67 major providers of occupational education (who were asked to have the survey completed by "someone in your organization who is familiar with the career information needs of the people you serve. This could be a director of guidance, a director of occupational education programs, a counselor, an occupational education teacher, or an administrator;")

-25 teachers and State Education Department professionals involved in the development of the occupational education curricula;
-10 professionals identified by the Office of Vocational Rehabilitation;
-10 field professionals identified by the Office of Employment and Training, Job Training Partnership Act;
-5 professionals associated with Education Information Centers;
-3 professionals recommended by the Commission for the Blind and Visually Handicapped;
-1 Director of MetroGuide; and
-1 Director of Adult and Continuing Education.

ANALYSIS

The data were analyzed using LOTUS 123 (Lotus Development Corporation, 1985) and STATS-2, Release 2.0 (STATSOFT, 1985). For each item, a mean and standard deviation were computed separately for the national and state panels. In the analysis, unanswered items or items with more than one response were handled as missing data and eliminated from the analysis.

Comments on the survey responses were read and incorporated in the findings.

Surveys of User Satisfaction

The purpose of the Surveys of User Satisfaction was to determine the degree to which various groups were satisfied with the computer-based career information delivery systems they were using as well as what each of these groups would like to see in career information deliver systems in the future. The four groups were principals, counselors, students, and parents.

INSTRUMENT

Because the needs, interests, and points of view of the four groups differ from each other, four different instruments were designed for this survey. The content of each of the instruments was based, again, on the information components and design considerations identified in the review of the literature. Each instrument is described below, and all of the Surveys of User Satisfaction and related cover letters are included as Appendix II.

The Principal's Survey of User Satisfaction

The Principal's Survey of User Satisfaction contained twenty items divided into two sections. The first section consisted of ten items which asked how the school had used their CIDS to support various guidance and educational activities. Principals were asked to respond "yes" or "no" to such activities as: "individual career counseling," and "occupational education programs." The second section consisted of ten statements for each of which the principals were asked to indicate their level of agreement or disagreement using a Likert-type scale. One of the items, for example, was: "The information presented in the CIDS is appropriate for the students in my school." Provision was made for additional comments.

The Counselor's Survey of User Satisfaction

The Counselor's Survey of User Satisfaction consisted of seven sections. The first section was similar to the principal's and asked the counselors to identify activities for which the CIDS had been used in their school. The second section asked the counselors to respond "yes" or "no" to possible individual student outcomes they had observed from the use of CIDS, such as, "increased awareness of self in relation to occupational and educational choices." Using a Likert-type scale the counselors were asked to rate the usefulness of 20 of the information components, design considerations, and related materials such as handbooks and training. The fourth section dealt with training received and its usefulness. The fifth section addressed implementation guides. The sixth section dealt with user session time, and the last section dealt with the user friendliness of the software and the presentation of the information. Opportunity for comments was provided in the last question which asked, "If you were designing your ideal computerized career information delivery system, what would be its most important features?"

The Student's Survey of User Satisfaction

The Student's Survey of User Satisfaction consisted of 15 items calling for a "yes" or "no" response. They ranged from questions about the ease of system use to the outcomes of having used the CIDS. Students were also asked to specify their grade in high school, the system they had used, and the number of times they had used it. Again, provision for comments was made through an open-ended question: "If you have any suggestions to help make a computerized system more useful, please write them on the back of this sheet."

The Parent's Survey of User Satisfaction

The Parent's Survey of User Satisfaction was divided into two sections. The first section was designed to provide information about the parent's opinion of the quality of the career information system at the student's school. The second section asked the parents whether or not they believed a computer would be a good tool to carry out ten specific guidance purposes, such as "show relationships between work and educational programs."

POPULATION

Since the purpose of the Surveys of User Satisfaction was to determine the level of satisfaction of a varied pool of public secondary school users, sites were selected from as many as possible of the vendors of CIDS. At the same time, an attempt was made to have adequate geographic coverage of the State. However, there was no central, reliable source of the schools using any or all of the systems. Therefore, schools were identified through a variety of means. The details of selection of the 41 schools surveyed are as follows:

-For CIS, 15 high schools using MetroGuide were identified by the New York City Board of Education;

-For GIS, 15 schools were selected from a state-wide list provided by the Onondaga-Madison BOCES;

-For CHOICES, five schools were selected from a list provided by the vendor;

-For C-Lect and SIGI, one school each was surveyed from a list supplied by the vendor. In both cases, they were the only secondary schools on the vendor's list;

-For Discover, four secondary schools were selected from a list supplied by the vendor. It should be noted that this is far fewer than originally planned, but delays in receiving the list of sites and lack of information on the number of sites contributed to the number selected. In fact, the deadline for return of survey instruments was extended to be able to include any Discover sites.

-COIN was not included in the Survey of User Satisfaction because, according to information supplied by the vendor, there were no secondary schools using their computerized system in the State.

Each school selected was sent a package consisting of the following surveys:

-one Principal's Survey of User Satisfaction;

-one Counselor's Survey of User Satisfaction;

-10 Student's Surveys of User Satisfaction; and

-10 Parent's Surveys of User Satisfaction.

Separate cover letters were written to each of the above groups and provided in like quantity. In addition, stamped return envelopes were provided for the students and for the parents. The principals were asked to complete their surveys, to give the counselor's survey to the person most familiar with the CIDS in the school, to give the 10 student surveys to students who had used the CIDS, and to give these students the parent surveys to take home as well. Principals, counselors and parents were also given copies of a letter written by Assistant Commissioner James Kadamus authorizing the study and requesting their cooperation. Copies of these letters are included with the surveys in Appendix II. To encourage returns, principals were asked to be responsible only for the distribution, not the collection, of the surveys.

Particular assistance in assuring returns was received from Larry Edwards, Director of Pupil Personnel Services at the New York City Board of Education, who saw to it that the appropriate memorandum from the Executive Director of the High School Division was sent to the principals being asked to complete the survey. Similarly, Robert Joyce, Manager of Instructional Computing at the Central New York Regional Computer Services Center, used his electronic network to inform other computer center managers of the survey and to ask their cooperation It should be noted that when the principals returned their surveys, there was a generally good response from the others in their schools. Special thanks go to those principals, and their names are listed with acknowledgment in Appendix III.

ANALYSIS

The data were entered and analyzed using LOTUS 123 (Lotus Development Corporation, 1985) and STATS 2, Release 2.0 (STATSOFT, 1985.) The original intent for analysis had been to look at the data aggregated across all systems within each survey and then to compare the results by system for each survey. There were too few respondents to carry out this plan completely. Therefore fewer comparative analyses were made. The description of the analyses are presented below for each of the surveys.

The Principal's Survey of User Satisfaction

For the first section, the percentage of principals responding positively to each of the possible uses of CIDS in their schools was computed. For the second section, the mean and standard deviation of the level of satisfaction with their CIDS was computed for each item. In addition to the aggregate analysis, a comparison using a t-test of responses from principals of schools using CIS was made with those from principals of schools using GIS.

The Counselor's Survey of User Satisfaction

For the first twenty items, the percentage of counselors responding positively to each of the possible uses of CIDS and outcomes from CIDS in their schools was computed. For the 20 questions on information components and related materials as well as for the questions on training and handbooks, the mean and standard deviation for assessment of usefulness on the five point scale was computed. The mean was computed for counselors' estimates of average time per session and desirable time per session at the computer.

Using t-tests, comparisons were made between the responses of counselors from schools using CIS with those of counselors from schools using GIS.

Additional comments on the response sheets were read and recorded for the findings.

The Student's Survey of User Satisfaction

The student's survey consisted of 15 questions. For each item, the percentage of students responding positively was computed.

Using analysis of variance, a comparison was made between the means of students from schools providing CIS, those from schools providing GIS, and those from schools providing CHOICES.

In addition, analysis of variance was used to examine differences in responses by grade levels, aggregating all systems.

The Parent's Survey of User Satisfaction

The percentage of parents responding positively to each question was computed.

Only the first five questions on the parent survey were designed to compare systems. For these questions, analysis of variance was used to compare the responses of parents whose children attend schools providing CIS with those providing GIS and those providing CHOICES. The remaining questions were designed to elicit parents' opinions of what a computerized system should do and were therefore not subjected to comparative analysis.

The Site Visits

The purpose of the site visits was to examine the systems in schools and agencies where they were in use and to gain the opinions of counselors in a less formal manner so that issues which might not emerge in a survey would surface. In addition, where the Surveys of User Satisfaction dealt only with secondary school sites, the visits were made to a variety of types of locations.

INSTRUMENT

A questionnaire was devised that centered on four key questions:

-the major programmatic goals of the career counseling program;

-the most important kinds of information needed by clients to make career and educational decisions;

-how a computer-based CIDS can help meet the goals and deliver information; and

-the major strengths and weaknesses of the system in use.

A copy of the form used by the site interviewer is attached as Appendix IV.

POPULATION

Visits were made to five high schools, one junior college, and one local vocational rehabilitation office.

ANALYSIS

The information obtained during the site visits was recorded on the forms at the time of the interviews. The responses were examined to see how well the systems in use were meeting the programmatic goals of the career counseling program and the career decision needs of individuals. Results were summarized by type of institution visited and across all types.

THE REQUEST FOR INFORMATION FROM VENDORS

The purpose of the request for information from vendors (RFI) was was to provide a basis for assessing the contents, benefits, and costs of each system and to compare them with each other on criteria that were as specific as possible.

INSTRUMENT

The first four sections of the RFI were based on the information components and design considerations identified in the review of the literature and confirmed by the Information Validation Survey, the Surveys of User Satisfaction and the site visits. It was composed of 99 items concerning occupational and educational information. For each item, the responding vendor was asked to state whether the item was currently in the system at the national level of analysis, whether it was in the system at the New York State level of analysis, and whether or not the system had the capability of incorporating the information at the New York State level. Following that, the vendor was asked to indicate whether or not the system incorporated particular design features, materials and training.

In the next four sections, the vendors were asked to provide information concerning the length of user sessions, the machines and media available, the availability of research and evaluation studies concerning the use of their system as a state-based CIDS, and any additional or optional features of the system.

Vendors were also asked to provide printouts of a particular occupations, program of study, and educational institution to be used in assessing the comprehensiveness and accuracy of their data.

Finally vendors were asked for the costs of their system. Since all vendors price their systems in different ways based on many variables that they determine, a pricing scenario was developed so that costs could be compared on a similar basis. The scenario enabled the investigators to deal with a number of issues of interest to the State, including entry of State developed data and files into each of the systems.

The scenario is presented below:

Assume the following:

A. Your system is a New York State career information delivery system.

B. You are delivering your basic system of occupational and educational information without any additions of data or files.

C. In the first year of delivery, there are 100 MS-DOS (IBM compatible) junior and senior high school sites; in the second year, 100 similar sites are added; and in the third year, you are delivering to a total of 300 sites.

1. What is the total cost of the system for each of the three years? Provide a work sheet to show the breakdown of costs for such items as initial and subsequent license fees to the State; per site license fees; other software fees; training of counselors; counselor implementation handbooks @ 1 per site per year; indices to the system @ 2 per site per year; user handbooks @ 500 per site per year; and any other costs needed so that the system can be fully implemented, delivered and used.

2. If the State provided data on entry level wages, employment outlook, and licensing requirements for 600 SOC based occupations, what would be the total costs for each of the three years to enter and maintain that information in your system. Provide a breakdown of these costs by data entry costs to the State; by site use costs and/or other costs as applicable to the practices of your organization.

3. If the State wanted to enter the data in your system, would you provide the documentation necessary? What would be the cost of this option for each of the three years? Provide a breakdown as in 2.

Assume the State created an entirely new file which listed 350 JTPA program providers with information on the area and clients served and with links to the relevant occupational descriptions in your file.

4. What would be the total cost to the state for your system to incorporate and deliver this file over the the three years described above? Provide a breakdown as requested in question 2.

5. Describe your policies concerning copyrights and use of state modifications to your system.

6. If you have available other systems in addition to the basic system and modifications for which you provided costs in answer to the above questions, please describe those systems and the cost of utilizing them in the three-year scenario described.

N.B.: Please be sure that all costs provided are accurate and realistic. While this is not a formal bid, it is expected that costs over the next three years will be consistent with those provided herein.

The Request for Information is attached as Appendix V.

POPULATION

The RFI was sent to the six vendors who had been identified as major providers of CIDS in New York State. They were C-Lect, CHOICES, CIS, Discover, GIS, and SIGI.

ANALYSIS

The data were entered and analyzed using LOTUS 123 (Lotus Development Corporation, 1985) and STATS-2, Release 2.0 (STATSOFT, 1985) as described below for each section of the RFI.

Information Components, System Design, and Support Materials

A point system was established for the items related to information components and system design features. In this system, items were assigned a value of one, two, or three points, based on the results of the previous surveys. In addition, some information components were only counted for national information while others were counted for national and state information. This decision was based on information provided by the office of Research and Statistics, New York State Department of Labor. The total number of points possible was 300.

A comparative analysis of the percentage of points for all information components, design considerations, and support materials were carried out, as well as separate comparisons for national information available, New York State information available, the ability to add New York State Information, system design considerations, and user materials and support. Details of the number of points assigned to each information item are presented in Appendix VII, Procedure and Instruments for Evaluating CIDS.

Length of Session

A comparison was made of the vendors' estimates of the average length of time it generally takes high school students to complete a session at the computer in which they use the occupational exploration strategy or strategies and generate a list of occupations meaningful to them.

Machines and Media

A chart was developed to present the comparative capabilities of the systems to run on different time share and microcomputers.

Comprehensiveness of Information

The printouts of occupational and educational institution information provided by each vendor were also analyzed. The occupational information printouts were analyzed by a former SOICC Director and CIDS Manager and the educational information by the New York State Office of Higher and Professional Education. There were 20 items measurable for comprehensiveness and accuracy on a scale of 5 to 1 ranging from "excellent" to "atrocious." If a system was completely lacking in information on any item, that item was scored 0. The highest possible score for each system was 100. Each system's total score was computed and a chart comparing the per item scores and total scores was created. Details for scoring are presented in Appendix VII, Procedure and Instruments for Evaluating CIDS.

The items which were scored are:

Occupational Information

- bias-free job titles and descriptions
- occupational description
- job duties, including tools and equipment used, if applicable
- interests and temperaments
- aptitudes
- skills, education, and training required for entry level positions
- physical demands and activities
- working conditions (includes environmental conditions and hours of work and travel)
- future outlook
- earnings
- related occupations, including occupational group
- places of employment

Educational Institution Information

- admissions requirements
- cost (in-state tuition, room and board for year specified by system)
- type of institution
- housing availability
- information about graduate (post-baccalaureate) programs in education
- services for people with handicapping conditions
- enrollment (number of students)

intercollegiate sports (not able to be rated by the group rating the information in this study)

The following sources were used to validate the occupational information:

-SOC Career Profiles (National Crosswalk Center, 1985;)

-Occupational Projections and Training Data (U.S. Department of Labor, 1986;)

-Occupational Outlook Handbook, 1986-87 (U.S. Department of Labor, 1986;) and

-Guide for Occupational Exploration (U.S. Department of Labor, 1984.)

Costs

The vendors' presentations of costs were compared in the following ways:

1. the cost of implementing the system in each of three years in the scenario described earlier in this section of the chapter under "Instrument."
2. a three-year cost analysis of a vendor maintained State database;
3. a three-year cost analysis of a State maintained State database; and
4. a three-year cost analysis of a vendor developed file of State JTPA program providers as described in the scenario.

Other Information in the RFI

Other information obtained from the RFI such as vendor policies concerning copyrights, research on their system, and optional features was recorded.

Demonstration of CIDS to the System Review Panel

The purpose of demonstrating the CIDS to the System Review Panel was to allow state users to evaluate the appropriateness and useability of the systems with the populations they or their agencies serve. Two areas of particular concern were the use of systems in classroom or group settings at the junior or senior high school level and the possible contribution of the systems to an individual's career planning.

INSTRUMENT

A rating booklet was developed for use by each participating review panel member. The introduction to the booklet presented a brief history of the project, the goals of the system demonstration review, an agenda for the day and directions. Following the introductory pages, there were six differently colored sets of pages to be used for taking notes and rating each system.

The actual rating sheets consisted of 15 items to be marked "excellent" to "atrocious" using a five point Likert-type scale. Three criteria were used to select the items. First, they had to be important to users as determined through the previous work of this study. Second, they had to be system features which could be observed in the course of the demonstration. Finally, they had to be non-duplicative of information gathered through the RFI. The introduction to the instrument and one copy of the notes and rating pages are attached as Appendix VI.

POPULATION

There were two populations at the demonstrations. The first was the six vendors, all of whom had responded to the RFI. They were: C-LECT, CHOICES, CIS, Discover, GIS, and SIGI. Second, was the panel invited to review the demonstration.

In forming the review panel, the goal was to have representation from as many user groups as possible, from all the geographic areas of the State, and from both counseling practitioners and administrators. Accordingly 50 people were invited. They were drawn from the following groups and from suggestions made by these groups: the SOICC Statutory Committee, The SOICC Advisory Committee, the Office of Occupational and Continuing Education of the State Education Department, the major providers of occupational education across the State, the Office of Higher and Professional Education, the Education Information Centers, the Office of Vocational Rehabilitation, and the Department of Labor.

It was made clear to all potential panel members that they would have to participate in the entire day's proceedings so that they could produce ratings that would be comparable for all systems. The letters of invitation and response forms are attached as part of Appendix VI.

PROCEDURE

Prior to the day of the presentation and demonstration, June 24, 1986, the vendors had been informed of the format of the day and their related responsibilities. In addition, a meeting of the vendors was held the evening prior to the demonstration to insure that all questions regarding purpose and procedure would be answered, and to determine the order of morning presentations.

On the morning of June 24th, the System Review Panel was introduced to the purpose of the demonstration and their role. The idea of rating, rather than ranking, systems was stressed. It was made clear to them that all systems could be rated high, or low, on any or all of the criteria.

Following the introduction, each vendor spoke for 15 minutes on the four pre-assigned topics:

-an overview of the system;

-the philosophy underlying the system;

-the use of the system in classroom or group settings at the junior or senior high school level; and

-the major contribution the system makes to an individual's career planning.

No representative from any other CIDS was present during any of the oral presentations to avoid the problem of rebuttal. Each CIDS representative spoke only of his or her system. Panel members had color coded sheets in their rating books for taking notes on the speeches so that the knowledge gained from them could be incorporated in their ratings.

In the afternoon, the CIDS were demonstrated to the System Review Panel by their representatives. Tables with appropriate electrical connections were placed around the perimeter of a large room. Each CIDS was assigned a table. The vendors had been instructed to bring their own equipment as well as counselor implementation materials and student user handbooks.

The members of the System Review Panel had been divided arbitrarily into six groups. Each group began at the table of a vendor. The CIDS was demonstrated for a half-hour. At the conclusion of each half-hour, five minutes was allowed for completing the ratings and transition. Then the groups moved around the room to the next CIDS demonstration. In all each vendor presented to each of the groups, and all of the groups viewed each CIDS for one half-hour. There was some time at the end of the afternoon for panel members to return to any of the CIDS representatives to ask for clarification or expansion of any points.

The rating booklets were collected as the members of the System Review Panel left the demonstration area.

ANALYSIS

Data from the rating instruments were entered and analyzed using LOTUS 123 (Lotus Development Corporation, 1985) and STATS-2, Release 2.0 (STATSOFT, 1985).

The mean and standard deviation of the responses for each item was computed by system and compared in a chart.

A rating scale totaling 100 points was created by weighting five of the original fifteen items, each of which was worth a possible high score of 5. The resulting rating instrument is included in Appendix VII, Procedure and Instruments for Evaluating CIDS. The system demonstration score for each system was then computed and compared in a bar graph.

Finally, the scores of the CIDS on the RFI, the accuracy and comprehensiveness of information, and the System Review Panel ratings were combined to give an overall rating to each system.

Results of the analysis of the System Review Panel as well as the other analyses described are presented in the next chapter, "Findings."

Chapter Four
FINDINGS

Introduction

In this chapter, the results of each of the surveys and information gathering activities are presented along with a discussion of the implications of the results to the study in general. At the end of the chapter, conclusions drawn from an examination of all the information gathered will be presented.

The major sections of this chapter are:

-The Information Validation Survey;
-The Surveys of User Satisfaction;
-The Site visits;
-Information from Vendors;
-Demonstration of CIDS to the System Review Panel;
-Conclusions; and
-Final Ratings of the CIDS.

The Information Validation Survey

The Information Validation Survey was sent to two panels, a panel of national experts and a panel of state experts in the uses of career information. Of the eight national experts, 100% responded to the survey. Of the 122 state experts, 72 or 59%

responded.

The purpose of the survey was to validate the information components and design considerations identified through the review of the literature. Respondents were asked to circle the appropriate evaluation for each item. The possible responses were:

5 = Highly Desirable
4 = Desirable
3 = Neither Desirable Nor Undesirable
2 = Undesirable
1 = Highly Undesirable

Examination of the national panel and state panel mean ratings for each of the 85 information components and system design considerations shows that all items were validated. In addition, there was remarkable consistency between the national and state panels as to which items received high mean ratings and which relatively low mean ratings.

Therefore, in carrying out the subsequent evaluations of systems through the requests for information from the CIDS and the presentation and demonstration of the CIDS to the System Review Panel, all of the information components and design considerations were incorporated. Further in calculating the ratings associated with the CIDS evaluations, the information about the relative rating of items by the national and state panels was used to help determine item weights.

The various information items and design considerations are grouped below for ease of discussion.

OCCUPATIONAL INFORMATION COMPONENTS

A closer look at the occupational information components, presented in Table 1, Information Validation Survey: Occupational Information, Responses of the National and State Panels, shows little variation in the comparative ratings of these information components. It may be noted that the highest mean rating of an item by the national panel was 5.00 and the lowest rating was 4.00. No rating, therefore, was below "Desirable," and 64% of the items were rated 4.50 or better. The highest mean rating of these items by the state panel was 4.92 and the lowest rating was 3.69. The state panel rated 46% of the items 4.50 or better. While the state panel ratings were slightly lower overall than the national panel, Table 1 shows correspondence between the two panels in the relative worth given to each item.

Please note, that item titles are abbreviated in this table and others related to the Information Validation Survey. The full titles are in the instrument which can be found in Appendix I. All tables related to the Information Validation Survey follow the discussion of this survey.

SECONDARY EDUCATION INFORMATION COMPONENTS

The mean ratings of the panels to the items describing secondary areas of education are given in Table 2, Information Validation Survey: Secondary Education Information, Responses of the National and State Panels. The mean ratings of all items by both panels ranged from 4.13 to 4.75, well above "desirable."

POST-SECONDARY EDUCATION INFORMATION COMPONENTS

The section about post-secondary education information components is comprised of both program of study and educational institution information.

The national panel rated 22 of the 28 items at 4.50 or higher. Type of institution, admission requirements, programs offered, and degrees offered were all rated 5.00. Three of the same items, admissions requirements, programs offered, and degrees offered also had the highest mean state panel rating. Both the national and state panels gave their lowest ratings to information about library facilities and intercollegiate sports. The means and standard deviations are presented in Table 3, Information Validation Survey: Post-Secondary Education Information, Responses of the National and State Panels.

FINANCIAL AID AND SCHOLARSHIP INFORMATION COMPONENTS

The importance of information about financial aid and scholarships in the eyes of both the national and state panel members can be seen in the details of Table 4, Information Validation Survey: Financial Aid & Scholarship Information, Responses of the National and State Panels. The national panel gave three of the six items a mean rating of 5.00 with no variation by any panel member. All of the state panel ratings are above 4.50, except for one, and that one is at 4.44.

SYSTEM DESIGN CONSIDERATIONS

This portion of the study was used to validate some system features rather than information components. All of the features were rated well above 4.00 by both panels except for links to published assessment instruments which was rated 3.88 by the national panel and 3.92 by the state panel. The means and standard deviations are presented in Table 5, Information Validation Survey: System Design Considerations, Responses of the National and State Panels.

COMMENTS

Comments from the respondents generally echoed their support of the items listed. One state panel respondent wrote, "Whoever put this together is to be highly commended. Such a system is very desirable and would be most helpful to our students." national panel respondents, in addition to commenting positively on the list of items, noted that the needs of individuals differ with their age and stage of career development. One of the National Panel members stressed the need for exploration of such areas as work and the family and work environment, areas that would bring the occupational education curricula and the career information components together.

Table 1

INFORMATION VALIDATION SURVEY: OCCUPATIONAL INFORMATION RESPONSES OF THE NATIONAL AND STATE PANELS

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
1. Occupational title and code	4.88	0.35	4.65	0.63
2. Occupational description	5.00	0.00	4.92	0.28
3. Occupational group or cluster	4.75	0.46	4.47	0.58
4. Job duties	4.88	0.35	4.88	0.33
5. Interests of workers	4.63	0.52	4.19	0.82
6. Aptitudes	4.63	0.52	4.61	0.64
7. Temperaments	4.38	0.52	4.18	0.92
8. Entry level skills required for job	4.88	0.35	4.83	0.38
9. Physical demands	4.38	0.74	4.36	0.68
10. Physical activities	4.25	0.46	4.31	0.76
11. Tools, equipment, etc.	4.13	0.64	4.29	0.72
12. Environmental/work conditions	4.50	0.53	4.44	0.58
13. Hours of work and travel	4.00	1.07	4.22	0.74
14. Industries	4.75	0.46	4.50	0.61
15. Hiring channels	4.13	0.64	4.10	0.72
16. Career ladders	4.50	0.53	4.37	0.70
17. Occupational outlook	4.88	0.35	4.75	0.50
18. Supply and demand	4.50	0.76	4.57	0.58
19. Current employment	4.25	0.71	3.82	0.82
20. Earnings and benefits	4.88	0.35	4.63	0.49
21. Education/training required	5.00	0.00	4.92	0.28

Table 1 Continued

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
22. Licensing, certification	4.63	0.52	4.78	0.45
23. Helpful secondary school subjects	4.38	0.74	4.53	0.58
24. Related occupations	4.63	0.52	4.26	0.65
25. Related military occupations	4.13	0.83	3.69	0.82
26. Sources of additional information	4.25	0.89	4.38	0.62
27. Job seeking skills	4.88	0.35	4.53	0.61
28. Entrepreneurial information	4.63	0.52	4.19	0.72

Table 2

INFORMATION VALIDATION SURVEY: SECONDARY EDUCATION INFORMATION RESPONSES OF THE NATIONAL AND STATE PANELS

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
29. Area of concentration description	4.13	0.83	4.53	0.63
30. Area of concentration cluster	4.13	0.83	4.33	0.67
31. Typical course work	4.50	0.53	4.42	0.67
32. Types of learning activities	4.25	0.89	4.29	0.68
33. Skills and knowledge acquired	4.75	0.46	4.49	0.71
34. Related entry level occupations	4.50	0.53	4.51	0.61
35. Related occ's further study	4.25	0.71	4.31	0.65
36. Related post-secondary programs	4.38	0.74	4.32	0.65

Table 3

INFORMATION VALIDATION SURVEY: POST-SECONDARY EDUCATION INFORMATION RESPONSES OF THE NATIONAL AND STATE PANELS

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
(Program Descriptions)				
37. Program description	4.88	0.35	4.58	0.65
38. Program group or cluster	4.63	0.51	4.31	0.65
39. Typical course work	4.50	0.53	4.39	0.64
40. Types of learning activities	4.25	0.89	4.21	0.77
41. Skills and knowledge acquired	4.50	0.53	4.52	0.58
42. Certificates or degrees earned	4.88	0.35	4.55	0.58
43. Length of time to complete	4.75	0.46	4.51	0.61
44. Related occupations	4.50	0.53	4.34	0.61
45. Related programs of study	4.50	0.53	4.27	0.60
46. Institution types	4.88	0.35	4.37	0.62
(Institution Descriptions)				
47. Name/address	4.88	0.35	4.64	0.61
48. Geographic location	4.63	0.52	4.53	0.69
49. Type of institution	5.00	0.00	4.49	0.65
50. Admission Requirements	5.00	0.00	4.65	0.63
51. Admissions contact	4.50	0.53	4.29	0.80
52. Cost	4.88	0.35	4.60	0.60
53. Housing information	4.50	0.53	4.32	0.77
54. Financial aid information	5.00	0.00	4.54	0.69
55. Financial aid contact	4.63	0.52	4.25	0.82

Table 3 Continued

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
56. Programs offered	5.00	0.00	4.65	0.63
57. Certificates or degrees awarded	5.00	0.00	4.54	0.63
58. Length of time to complete	4.75	0.46	4.47	0.60
59. Special programs	4.13	0.64	4.28	0.74
60. Library and learning center	3.88	0.64	3.87	0.75
61. Support services	4.00	0.76	4.08	0.80
62. Services for handicapped	4.50	0.53	4.40	0.69
63. Intercollegiate sports	3.63	0.74	3.76	0.85
64. Accreditation	4.13	0.64	4.21	0.84

Table 4

INFORMATION VALIDATION SURVEY: FINANCIAL AID & SCHOLARSHIP INFORMATION
RESPONSES OF THE NATIONAL AND STATE PANELS

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
65. Name	5.00	0.00	4.69	0.70
66. Eligibility requirements	5.00	0.00	4.75	0.67
67. Application procedures and deadline	5.00	0.00	4.65	0.72
68. Size or basis of award	4.86	0.35	4.57	0.73
69. Contact person	4.50	0.76	4.44	0.80
70. How to obtain add'l information	4.50	0.76	4.57	0.58

Table 5

INFORMATION VALIDATION SURVEY: SYSTEM DESIGN CONSIDERATIONS

RESPONSES OF THE NATIONAL AND STATE PANELS

Survey Item	National Panel		State Panel	
	Mean	SD	Mean	SD
71. Interactive search of occupations	4.63	0.52	4.58	0.65
72. Ability to query why not	4.50	0.53	4.18	0.78
73. Direct access to occupational info	4.88	0.35	4.78	0.42
74. Direct access to secondary ed info	4.50	0.53	4.31	0.70
75. Direct access to post-sec prog info	5.00	0.00	4.61	0.57
76. Interactive search of ed inst'ns	4.50	0.76	4.40	0.74
77. Direct access to ed inst'ns info	4.88	0.35	4.42	0.62
78. Can match progs and ed inst'ns	4.88	0.35	4.64	0.68
79. Links to assessment instruments	3.88	0.83	3.92	0.84
80. Can sort for occs by other occs	4.75	0.46	4.34	0.78
81. Interactive search of financial aid	4.63	0.52	4.35	0.78
82. Can operate on microcomputer	4.63	0.74	4.66	0.58
83. Provides printed record of session	5.00	0.00	4.81	0.52
84. Can add state specific info	4.75	0.71	4.54	0.58
85. Can add new records for occs & progs	4.63	0.52	4.64	0.51

The Surveys of User Satisfaction

Four types of Surveys of User Satisfaction were sent to each of the 41 schools selected. Some responses were received from 26, or 63%, of the surveyed schools. These returns, however, did not adequately represent all of the systems in use in the State. The breakdown by CIDS is as follows:

-Of the 15 CIS sites surveyed, 14 returned responses.
-Of the 15 GIS sites surveyed, 6 returned responses.
-Of the 5 CHOICES sites surveyed, 3 returned responses.
-Of the 4 Discover sites surveyed, 4 returned responses, but 3 of these indicated they were using GIS. It was not clear whether this was instead of or in conjunction with Discover. These returns could not be used for system comparisons, but they could be used to measure overall responses to CIDS. These are referred to henceforth as "mixed sites."
-No returns were received from either the C-LECT or SIGI site surveyed.

Each site was sent 1 principal's survey, 1 counselor's survey, 10 students' surveys and 10 parents' surveys. The particular returns by survey instrument varied within the sites responding. The number of returns will be given in the discussion of each survey.

In addition to limitations stemming from the unequal distribution of returns, two additional limitations to the analyses of the Surveys of User Satisfaction must be noted. First, the identification of the sites which were sent the surveys was different for each CIDS. Details of this are in the previous chapter. Second, the sites themselves varied greatly from large, inner-city schools to small rural schools. There was no way to control for this variation nor to measure its impact on the results

The results of the analyses and discussions of their implications for the study follow in sections for each survey.

PRINCIPAL'S SURVEY OF USER SATISFACTION

Returns were received from 26 principals. Of these 14 were from sites using CIS, 6 from sites using GIS, 2 from sites using Choices, 1 from a site using Discover and 3 from mixed sites.

The survey was divided into two parts. In the first part, principals were asked whether or not the CIDS had been used in their schools to support particular activities. The percentage of principals responding positively to each item for the total group, and for CIS schools and GIS schools respectively is given in Table 6, Principals' User Satisfaction: Use of Cids.

Items in all the following tables may be abbreviated. The actual instruments may be seen in Appendix II. The tables related to the Surveys of User Satisfaction follow the discussion of these surveys.

The second part of the survey asked the principals to express their degree of agreement on a scale of 5 to 1 with 10 statements that directly related to satisfaction. With the exception of one item, the mean of each of the item scores, for all principals was between 4 "agree" and 5 "strongly agree." The lowest rated item was, "The system has been used successfully for instruction."

Mean scores for the statements are presented in Table 7, Principals' User Satisfaction: Item Scores. The total group score is given, followed by scores for principals of CIS schools and then GIS schools. The CIS and GIS scores were compared using t-tests. Results significant at the .05 or less level are starred. Three items had significant differences. They dealt with the general level of satisfaction with the system, the worth of the system in terms of cost, and the ability to schedule students. In all three cases, the principals of CIS schools gave higher ratings than the principals of GIS schools.

COUNSELOR'S SURVEY OF USER SATISFACTION

The Counselor's Survey of User Satisfaction was returned by 24 counselors: 12 from CIS schools, 6 from GIS schools, 3 from CHOICES schools, 1 from a Discover school and 2 from mixed sites.

The first 10 questions on the survey asked the counselors whether or not they had used the CIDS to support particular activities in their school. This was essentially the same question as that asked the principals. The next set of questions asked the counselors to indicate which of 10 student outcomes they had observed as a result of students using the CIDS individually or in groups.

Table 8, Counselors' User Satisfaction: Use of CIDS and Outcomes shows the percentage of counselors responding positively to the items for the total group, for CIS schools and for GIS schools. In general, it may be noted that a greater percentage of the counselors from schools using CIS responded positively to the student outcome items than did counselors from schools using GIS.

The next set of 20 questions in the survey of counselors listed information components and system design considerations drawn from the review of the literature and the Information Validation Survey. For each item, counselors were asked the "degree of usefulness of each item as it is presented in CIDS you are using in your school." The possible answers were:

5 = Extremely useful
4 = Very useful
3 = Moderately useful
2 = Not very useful
1 = Not at all useful
0 = Not applicable.

Mean responses were computed for all counselors and separately for counselors from CIS and GIS schools. T-tests were used to examine the differences in the means between the latter two groups. Two items were found to have significant differences: "Financial aid and scholarship information," and "Employability skills information." In both cases, CIS was scored higher than GIS. It may also be observed from the analysis presented in Table 9, Counselors' User Satisfaction: System Components, that the components were consistently rated higher by the counselors from schools using CIS than by the counselors from schools using GIS or by the total group of counselors responding.

Counselors also responded to questions about training and user materials with 79% saying they had received training and 77% saying they had a counselor's handbook or implementation guide. Those who had training rated it 3.61 on the same scale of usefulness, and those who had handbooks rated their usefulness at 3.27.

Counselors estimated that the average time session per user was 36 minutes and gave their ideal length of time for a session as 34 minutes. Overall, 75% of the counselors rated their CIDS as easy for students to use, and 75% also rated the information that students receive as easy to understand.

In general, counselors seem only moderately pleased with the CIDS used by their schools. None of the mean ratings for usefulness of system components, training, or materials reached 4.0. While 14 of these items were rated between "moderately useful" and "very useful," 6 were rated between "not very useful" and "moderately useful," and 2 were rated between "not at all useful" and "not very useful."

Counselors' comments in the open-ended question reflected some of their ideas about system improvements. Among the suggestions made by counselors were the following:

-More frequent updating of the system;
-Average salary in New York State for specific careers;
-Lists of companies that hire;
-A terminal with printout capabilities for all counselors;
-Greater interactivity;
-Employment opportunities;

-Interest inventories and surveys; and

-Greater availability for more students.

STUDENT'S SURVEY OF USER SATISFACTION

The Student's Survey of User Satisfaction produced 179 responses from 26 schools. Of these 111 had used CIS, 24 had used CHOICES, 23 had used GIS, 5 had used Discover, and 16 were from the mixed sites. The mean grade level reported by the students was 11, with 16 freshmen, 21 sophomores, 80 juniors, and 52 seniors responding to that question. Students' responses to the question regarding how often they had used the system ranged from once or twice through many times to many times per week.

Students were asked to respond "yes" or "no" to a series of questions regarding the ease of use of the system and the helpfulness of the information they found. In Table 10, Students' Levels of User Satisfaction, the percentage responding positively to each item is given for the total group, for those using CIS, those using GIS and those using CHOICES. In general, students liked using the CIDS and found them easy to use. More students found the CIDS useful in gaining information than in making career decisions. This would seem to support the role of CIDS as a tool or resource to be used in conjunction with counseling and career education activities.

An analysis of variance, using dummy coding, was carried out for the percentage responding positively by CIS, GIS and CHOICES users. Three items reached the required level of significance. Comments on the limitations of the population surveyed made in the introduction to this chapter should be noted.

An analysis of variance by grades was also carried out for each of the items in the students' survey. Only question 6 achieved a level of significance of $p<.05$. In response to the item, "Did the computerized system help you learn more than you knew before about how to make a decision about a career?" 93.8% of the ninth graders, 81.0% of the tenth graders, 58.8% of the eleventh graders and 68.6% of the twelfth graders responded "yes."

PARENT'S SURVEY OF USER SATISFACTION

The Parent's Survey of User Satisfaction drew 123 responses. Of these, 64 were from CIS schools, 31 from GIS schools, 18 from CHOICES schools, 3 from a Discover school and 7 from mixed sites.

The survey had two distinct sections. The first section of five questions was designed to assess the level of satisfaction with career information in their children's schools. The second section was designed to elicit parents' preferences for the content of computerized CIDS.

The first question asked parents if they thought their children's high school provided "the information needed for making career and educational choices." Of all the parents responding, 91.0% said "yes." Analysis of variance, however, showed a significant difference among CIS, GIS and CHOICES schools. The percent responding positively for CIS was 93.7; for GIS, 93.6%; and for CHOICES 72.2%.

The next question, which also achieved significance in a comparison of responses grouped by the CIDS of the children's schools, asked parents whether their children had ever brought home a printout from a computerized system at school. The percent responding positively for CIS was 92.1%, for GIS was 96.8%, and for CHOICES was 56.3%. It may be that the satisfaction expressed by parents with career information is related to the level of communication practiced by the school, rather than the system in use.

Of the parents who had seen a printout, 81.0% though it provided valuable information. Only 28.6% of the parents had ever seen their child use a computer in school to get occupational or college information. Of these, 100.0% thought the computer was a valuable tool. For these questions, there were no significant differences among the systems.

The second part of the parents' survey consisted of 10 items. Parents were asked to respond "yes" if they thought a computer would be a good tool for the purpose listed, or "no" if they thought a computer would not be a good tool for that purpose. The analysis, presented in Table 11, Parents' Preferences for CIDS' Contents, shows that parents generally supported the use of computers to deliver career and educational information, with one strong exception. More than 50% of the parents said they did not see the computer as a good tool to "clarify a student's values."

Table 6
PRINCIPALS' USER SATISFACTION: USE OF CIDS

Activity	% Total N=26	%CIS N=14	%GIS N=6
1. Individual career counseling	96.2	100.0	83.3
2. Career education groups or classes	84.6	100.0	100.0
3. College guidance	100.0	85.7	83.3
4. Special education programs	76.9	85.7	66.7
5. Occupational education programs	80.8	85.7	66.7
6. Basic skills or remedial reading	23.1	85.7	66.7
7. Subject class instruction	53.9	64.3	50.0
8. Job placement	30.8	21.4	50.0
9. Employability skills classes	42.3	35.7	66.7
10. Counseling physically handicapped	36.0	38.5	50.0

Table 7

PRINCIPALS' USER SATISFACTION: ITEM SCORES

Item	Total Mean (SD) N=26	CIS Mean (SD) N=14	GIS Mean (SD) N=6
11. Satisfied in general*	4.58(.58)	4.79(.43)	4.17(.75)
12. Students have said CIDS useful	4.46(.65)	4.57(.51)	4.33(.82)
13. Information is appropriate	4.54(.51)	4.64(.50)	4.33(.52)
14. Parents have said satisfied	4.04(.79)	4.00(.91)	4.00(.89)
15. System used for instruction	3.42(1.04)	3.50(1.09)	3.00(.63)
16. System accepted by counselors	4.50(.71)	4.43(.51)	4.50(1.23)
17. System worth the cost*	4.62(.50)	4.79(.43)	4.33(.52)
18. CIDS helps counselors use time	4.19(.80)	4.29(.73)	4.33(.82)
19. Training time appropriate	4.44(.65)	4.54(.52)	4.50(.55)
20. No problem scheduling CIDS use*	4.19(1.02)	4.57(.65)	3.67(1.37)

*=CIS v. GIS, $p<.05$.

Table 8
COUNSELORS' USER SATISFACTION: USE OF CIDS AND OUTCOMES

Activity	% Total N=24	%CIS N=12	%GIS N=6
1. Individual career counseling	75.0	91.7	100.0
2. Career education groups or classes	66.7	83.3	83.3
3. College guidance	79.2	100.0	100.0
4. Special education programs	43.5	58.3	60.0
5. Occupational education programs	65.2	83.3	80.0
6. Basic skills or remedial reading	21.7	33.3	20.0
7. Subject class instruction	43.5	58.3	60.0
8. Job placement	39.1	58.3	40.0
9. Employability skills classes	31.8	45.5	40.0
10. Counseling physically handicapped	52.2	58.3	80.0
11. Increased awareness of self	66.7	91.7	66.7
12. Knowledge of skills transferability	66.7	91.7	66.7
13. General knowledge of labor market	75.0	100.0	83.3
14. General knowledge about careers	75.0	100.0	83.3
15. General info about jobseeking skills	50.0	83.3	16.7
16. General info about education options	75.0	100.0	83.3
17. Specific ed institutions info	79.2	100.0	100.0
18. Gained info about financial aid	70.8	100.0	83.3
19. Made a decision about career choice	69.6	90.9	83.3
20. Made a decision about further educ.	70.0	100.0	83.3

Table 9

COUNSELORS' USER SATISFACTION: SYSTEM COMPONENTS

Item	Total Mean (SD) N=24	CIS Mean (SD) N=12	GIS Mean (SD) N=6
21. Occupational descriptions	3.54(1.98)	4.58(.52)	4.17(1.17)
22. Occupational clusters	3.08(1.74)	4.00(.60)	3.67(1.03)
23. Employment outlook information	3.08(1.86)	3.92(.79)	3.67(1.51)
24. Wage and salary information	2.88(1.68)	3.67(.78)	3.33(.82)
25. Physical demands and activities	3.04(1.76)	3.83(.72)	3.67(1.03)
26. Licensing and certification	2.83(1.76)	3.92(.79)	3.00(1.41)
27. Information about related occ'ns	3.04(1.83)	4.08(.52)	3.33(1.63)
28. Info about ed progs related to occs	3.42(1.93)	4.42(.52)	4.00(1.27)
29. Descriptions of educational progs	3.38(1.91)	4.50(.52)	4.00(1.10)
30. Info about occs related to ed progs	3.13(1.92)	4.00(.74)	3.67(1.75)
31. Educational institutions descrip'ns	3.17(1.90)	4.17(.58)	3.67(1.75)
32. Financial aid/scholarship info*	2.67(1.81)	3.92(.79)	2.83(1.17)
33. Employability skills information*	1.58(1.72)	2.67(1.67)	.50(.55)
34. User (student) handbooks	3.21(1.96)	4.33(.65)	3.33(1.63)
35. Interactive occupations exploration	2.43(1.78)	3.09(1.30)	2.83(1.47)
36. Ability to ask why not	2.96(1.92)	4.00(.74)	3.00(1.90)
37. Interactive ed. inst'ns exploration	2.30(1.82)	3.12(1.33)	2.17(1.60)
38. Method of direct access to occs	3.30(2.10)	4.27(.79)	4.00(2.00)
39. Methods of direct access to ed info	3.17(2.12)	4.27(.65)	3.50(2.35)
40. Links to assessment instruments	1.50(1.98)	1.75(1.91)	1.67(2.25)

*=CIS v. GIS, p<.05.

Table 10

STUDENTS' LEVELS OF USER SATISFACTION

Question	% Total N=179	%CIS N=111	%GIS N=23	%CHOICES N=24
1. Were you given a user handbook?*	88.8	99.1	73.9	83.3
2. If yes, was it useful?	98.7	100.0	100.0	100.1
3. Was the system easy to use?	95.5	93.6	100.0	100.0
4. Information easy to read/understand?	97.2	99.1	95.5	100.0
5. Learn something new about occs?*	85.9	89.1	72.7	95.8
6. Learn how to make a career decision?*	68.0	70.3	50.0	87.5
7. Understand occs & your interests?*	79.2	78.4	68.2	95.8
8. Understand occs & your abilities?	74.0	74.6	77.7	91.7
9. Relationship occs & education progs?	87.6	87.3	86.4	95.8
10. How to prepare for an occupation?	75.3	80.2	81.8	79.2
11. Help you make a career decision?	55.6	55.0	59.1	70.8
12. Did you get a printout?	94.4	98.2	95.5	91.7
13. Was having a printout useful?	93.7	96.4	95.5	87.5
14. Did you like using a CIDS?	97.2	98.2	100.0	95.8
15. Recommend the CIDS to someone else?	98.9	100.0	100.0	100.0

* = CIS v. GIS v. CHOICES, ANOVA P<.05.

Table 11

PARENTS' PREFERENCES FOR CIDS' CONTENTS

Item	%Total N=123
4. Identify careers based on student's interests and abilities	95.1
5. Identify colleges which meet student's needs and interests	98.4
6. Clarify a student's values	47.1
7. Show relationship between work and educational programs	86.1
8. Deliver information about occupations	98.4
9. Deliver information about areas of concentration in h.s.	84.4
10. Deliver information about educational programs in college	98.4
11. Deliver information about colleges and universities	99.2
12. Deliver information about private trade schools	92.9
13. Deliver information about financial aid and scholarships	93.5

The Site Visits

In addition to surveying schools in the State which were using CIDS, visits were made to sites in which the various systems were being utilized. The purpose of the visits was to examine the systems in schools and agencies to query counselors about their opinions of the system's on an informal basis. The questions which were asked were designed to obtain information which would not emerge on the surveys.

In an effort to provide some structure to the visits, a questionnaire was designed. A copy is attached in Appendix IV. The four questions were:

1. What are the major programmatic goals of the career counseling program in your school (or agency)?
2. What are the most important kinds of information needed by the clients you serve to make career and educational decisions?
3. How can a computer-based CIDS help meet these goals and deliver information?
4. What are the major strengths and weaknesses of the system you use (include training, ancillary materials, length of sessions, etc.)?

In addition to the answers to the questions, the name and address of the school or agency, the date of the visit, the name and title of the respondent or respondents, the number of clients served, and the length of time the system had been in use were recorded. At the end of the session, the counselors were asked if they wished to discuss issues or questions which had not been asked.

Visits were made to five high schools, one local vocational rehabilitation office, and one junior college. One of the high schools was using Discover running on both Apple and IBM microcomputers. They were completing their second year with Discover, after changing from GIS during the previous year. One school was using CHOICES with five microcomputers. The school which was using GIS had a computer terminal and was accessing the on-line system from a time-share computer. Another school was using MetroGüide with a microcomputer and modem, with some stand alone software. The school which was using two systems had GIS on-line from a main frame computer and Discover on a microcomputer. The vocational rehabilitation office was using CHOICES, and the junior college was using SIGI, both with a microcomputer.

The schools included two which had students in grades ten through twelve, and three which served students in grades nine through twelve. The titles of those who were interviewed were director of guidance, assistant principal for guidance, guidance chairman, and two guidance counselors. The length of time they had been using the CIDS ranged from one year to 15 years.

The smallest school had approximately 800 students. The other four had student enrollments of between 1050 and 1900. The number of students who had used at least one component of the school's CIDS during the past year ranged from 150 to 1050.

At the vocational rehabilitation office, the vocational rehabilitation counselor was interviewed. The system there had been in use for almost three years. It was his estimate that between 140 and 150 clients were served by the agency's computerized career information delivery system out of the total of 3000 a year who received some service from the office. The age of the clients who used the system during the past year ranged from 18 to 65.

At the junior college the director of career services was interviewed. The clients which the institution serves are 18 to 19 years old. He described them as "commuter, non-traditional" students. Approximately 300 of the 1000 to 1200 students enrolled have used the system each of the five years it has been in operation.

The responses from the sites visited are presented in the four sections below. Those for the first two questions are presented by type of institution visited, since both goals and the level of information needed tended to vary according to type of client served. The responses to the third and fourth questions are combined. In general, there was consensus on the uses of a computerized system to help meet goals. The conclusions drawn from the discussion of the strengths and weaknesses of systems are presented as a general overview of what counselors say they think are important components of a CIDS.

CAREER COUNSELING GOALS

Generally in the schools the goals of the counseling program were defined in terms of grade levels. Overall, the ninth grade goals were to develop career awareness and define work and personal values. The goal for vocational students was to help them find a program which matched their interests and personal needs. At the tenth grade level, the goals were directed toward helping the students find out more about occupational choices. The activities included career exploration, career decision making, and developing decision making skills.

For the eleventh grade, the goals were most often described in terms of assisting in the exploration of occupational and educational options and in clarifying post-secondary plans. Activities such as college search (including applying to college and getting financial aid), determining possible college majors, and developing job seeking and getting skills were most often mentioned. By the twelfth grade, the goals were primarily to assist with college choice, college entrance procedures, college and financial aid applications, resume writing, and filling out job applications.

The overall goal of the vocational rehabilitation program was to place clients in jobs. The counseling program supports this overall goal by assisting clients in establishing vocational goals. Since the psychological workups provided to clients do not include job specific recommendations, the CIDS is used to help sharpen the focus of clients in setting their vocational goals. The use of the system was described as assisting the agency to help their clients by diminishing the chances of misfits between people and jobs.

At the junior college, the counseling program goal was described primarily as to assist students with self-assessment, values clarification, and vocational exploration.

INFORMATION NEEDS OF CLIENTS

One school stated that since they have a pro-active approach to counseling, they encourage broad exploration and self assessment by their students. Self evaluation is dynamic and encourages adaptability on the part of the student. For this program, the CIDS structured search with variables, such as interests, aptitudes, and temperaments is a valuable tool.

The occupational information components most often mentioned by the school counselors were:

job descriptions (must be well done);
job duties;
interests related to a job;
aptitudes;
temperaments;
education and training required for a job;
working conditions;
employment outlook; and
earnings.

The educational information described as most useful included:

location and size of the school, size of the city;
majors/program of study information (important it be accurate);
campus activities available: sports, social;
financial aid available: type, number of students receiving aid, average award, application procedures;

entrance requirements: scores, applications, deadlines;
costs; and
good overall profiles of colleges.

The information cited as needed by clients at the vocational rehabilitation office included primarily what people who are changing occupations need to know to help insure that the change is not random. The system and information components included:

interest identification;
search routine;
physical demands of a job;
occupational description; and
job seeking skills.

The director of career services at the junior college listed the following system functions and information components as being important:

computerized self-assessment routine;
routine to identify and prioritize interests and values;
vocational exploration;
education and training required for a job;
occupational description; and
methods of entry into an occupation.

It is interesting to note that the information mentioned by those interviewed during the site visits agrees with information components and system design features which received the highest ratings on the Information Validation Surveys and the Surveys of User Satisfaction.

CIDS USES

When asked how a CIDS could help the school or agency to meet counseling program goals and deliver information, there was general agreement that computers are a good way to deliver career information and provide an excellent opportunity for clients to find the information they need on an individual basis. It should be noted that the examples given by counselors at all three types of sites visited were very similar, and that a few statements were made by all interviewed.

The advantages of using a computerized system which were most frequently discussed included the fact that computers are non-judgmental, and the users feel they get objective answers from the computer. Further, clients get printouts of the information obtained from the session at the computer to take home, and this allows their parents or other family members to become involved in their career choices. It was pointed out by several counselors that their CIDS is cost effective in that it provides an inexpensive source of large amounts of information.

Since users get immediate feedback from the computer during a session, they have the opportunity to see the results of their choices, to change choices, and then see the results of their changes. This broadens their horizons and encourages them to engage in "what if" strategies without risk. It is an effective way of helping people develop decision making skills.

Most clients begin their career exploration and decision making processes without any idea of what career they want or of what might be available to them. One goal of career counseling programs is to correct this situation. A computerized system allows users to delve into the labor market over and over from different directions, to test themselves against the conditions of occupations or occupational groups, and thereby help increase the number and types of opportunities which might be available to them.

The one area which was mentioned only by a school was the usefulness of their CIDS in teaching the new occupational educational programs, and particularly "Home and Career Skills". They found the computerized system to be extremely beneficial to both students and teachers in this activity.

In general, there was agreement that computerized systems are an excellent counselor tool, because vast amounts of information can be stored and made readily available to users. One counselor pointed out that the human brain cannot recall quickly minute details about occupational and educational possibilities, as can a computer. However, counselors stressed the caution that it should be remembered that a CIDS is only a tool. It cannot take the place of the counselor; personal intervention by the counselor is essential. Further, CIDS are most useful when they are used with other sources of information and not offered as the only counseling tool available.

STRENGTHS AND WEAKNESSES OF CIDS

While the individual responses to this question were directed toward the specific systems the respondents used, the strengths and weaknesses mentioned are combined without mentioning the name of the CIDS. Obviously, the opinion of one or two people about the strengths and weaknesses of any system cannot be considered a valid judgment of that system. However, the responses taken together do give a good picture of what counselors want and need in a computerized career information delivery system to help them serve their clients' needs and to meet their program goals.

Whether cited as a strength or weakness, the system and information components which emerged as being important to counselors included:

- The client and counselor manuals should be complete and easy to use.
- Training should be adequate to prepare counselors to make maximum use of the CIDS.
- The CIDS should be easy for the clients to use; should be user friendly.
- The computer printouts should be readable, easy to understand, and clear as to what information is being given.
- The language contained in the CIDS should be at a level which clients can understand.
- The CIDS should be designed to be very flexible, with several routines and ways to get at information.
- It should contain good links to available printed resources.
- The search routine in CIDS should be well designed so the results make sense to the users.
- The information about occupations must be accurate, current, interesting, and useful.
- The information about colleges should be up-to-date,

complete, and accurate.

-Information about financial aid is important.

-The length of and average sessions should fit into a class period.

In general, the findings of the site visits showed the following. As would be expected, the goals of career counseling programs vary depending on the type of institution and the clients served, and the specific types of information needed to meet those goals varies by level of detail and type. However, there is much similarity between agencies in the ways CIDS can be used and are being used to meet these goals. In addition, there is great similarity between counselors from different agencies in what they feel are the important components of a computerized system, training, and system support materials.

In summary, the information obtained from the site visits confirmed and reinforced the findings concerning information components and system design considerations obtained from the surveys.

The Information from Vendors

The responses to the request for information (RFI) and the ratings of the System Review Panel were combined to achieve a full picture of the CIDS under review in this study. Six vendors responded to the RFI. However, only five vendors completed the presentation and demonstration to the System Review Panel. Therefore, the analysis of the RFI response was limited to the five vendors completing the entire process. It should be noted that the initial letters of invitation sent to the vendors stipulated the requirements for participation. The responses analyzed came from C-LECT, CHOICES, CIS, Discover, and GIS. (In all analyses, the vendors will be presented in this alphabetical order.)

The RFI sought information on system components and features, machines and media available, related research and evaluation studies, and costs about each system from the vendors. In addition, all vendors were asked to supply current printouts from their CIDS on a particular occupation and institution. Each of the areas of the RFI will be discussed in the sub-sections which follow.

INFORMATION COMPONENTS, SYSTEM DESIGN, AND SUPPORT MATERIALS

Information Components

The vendors were asked to check a list of career information items contained their CIDS, compiled on the basis of the results of the Information Validation Survey and the Surveys of User Satisfaction. For each item, the vendor was asked to check all that applied:

-NATIONAL, indicates that your system currently carries information on this item representing a national level of data analysis;

-NYS, indicates that your system currently carries information specific to New York State for this item;

-ABLE, indicates that your system is currently able to carry state-specific information for this item if it were supplied to you.

As described in the previous chapter, "Methodology," and in Appendix VII, Instruments for Evaluating CIDS, items could be counted for one or all three of the levels of analysis and could carry a weight of one to six points.

The points for the vendors' statements of their CIDS' information components were counted and expressed as a percentage of the possible total. The scores for information components, thus achieved, were compared on three bases: national information, New York State information, and ability to add state information.

In Table 12, Information from Vendors: National Information, it can be seen that the range of scores was from 72.27% to 91.59%, with CIS at the highest, C-LECT following, and the remaining three grouped together at 72%. This table and the others related to the RFI are found after this discussion of the RFI findings.

Table 13, Information from Vendors: New York State Information, presents a similar analysis of New York State data which was reported as available. The discrepancies between systems was much greater. CIS scored 95.38%. The next closest was C-LECT with 58.46%, and the lowest on this factor was CHOICES with 13.85%. It may be noted, at this point, that CIS operates only as a state- or local-based system, and is operating in New York State, as MetroGuide, the New York City system.

The ability of the systems to add state information is presented in Table 14, Information from Vendors: Ability to Add State Information. CIS and CHOICES earned over 90 percent, with CIS at a high of 98.45%. The lowest score on this was Discover's 68.38%. Discover commented in their response that they were limited by file space in their ability to add information.

System Design Considerations

The fifteen items of system design considerations were analyzed similarly using a weighted scale. Table 15, Information from Vendors: System Design Considerations, shows that all systems had most of the features desired by respondents to the Information Validation and User Satisfaction Surveys.

System Support Materials and Training

The six weighted items describing vendors' system support materials and training were analyzed in the same way. Table 16, Information from Vendors: User Materials and Support, shows that four of the systems -- C-LECT, CHOICES, CIS, and GIS -- reported supplying 100.00% of the materials and services.

Score on Information, System Design, and Support Materials

Table 17, Information from Vendors: Total, All Information, combines the scores earned on all the system and ancillary features discussed above to give a picture of the overall content and capability of each of the systems being evaluated. The highest overall score was earned by CIS, 94.00%; second was C-LECT at 79.00%; third, GIS, 68.00%; fourth, CHOICES 67.34%; and fifth, Discover, 62.00.

LENGTH OF SESSION

Related to the contents and features of a system is the length of time it takes students or clients to complete a session in which they get information meaningful to them. Obviously, this can vary greatly depending upon the age, stage, and capability of the user. To get similar figures, the vendors were asked:

> Approximately how much time does it generally take for average high school students to complete a session in which they use the occupational exploration strategy or strategies and generate a list of occupations meaningful to them.

Counselors responded in their survey that that the ideal length of time for a session was 34 minutes. In the site visits, counselors expressed this as "less than a class period." The figures supplied by the vendors are:

C-LECT: 40 minutes;
CHOICES: 15 to 45 minutes;
CIS: less than one class period;
Discover: 5 to 60 minutes; and
GIS: 15 to 30 minutes.

MACHINES AND MEDIA

The vendors were asked to identify all the time-shared and microcomputer versions of their systems currently available and supported by their organization. No attempt was made to evaluate this information, since it is not the number of computer versions available that is important, but whether the software runs on a particular computer available to an interested school or agency. The list of computers identified by any of the systems and all of the systems running on each of those computers is given in Table 18, Hardware Versions: Mainframe Computers and Microcomputers.

In addition to identifying hardware versions of their systems, vendors were asked to describe any delivery media currently available and supported by their organizations "which would facilitate classroom delivery of occupational exploration and occupational information retrieval."

All of the vendors described a variety of methods for utilizing their CIDS in classrooms. One of the ways of using CIDS that is becoming increasingly possible is through the use of microcomputer labs and/or through the use of a microcomputer with a large screen. The importance of the vendors' responses lies in their support of the entire idea of using CIDS in relation to the new occupational education curricula. The following list is therefore not exhaustive but presents only some of the outstanding features of each system.

C-LECT: occupational briefs, occupational view deck, workbooks;

CHOICES: activities checklist, audio-visual orientation to the system, on-line "junior" system;

CIS: implementation handbook with lesson plans, needle sort deck, personal user's handbook;

Discover: career journey film, short form of Career Planning Program; and

GIS: posters, filmstrips, other printed materials.

COMPREHENSIVENESS OF INFORMATION

One of the concerns expressed by respondents of the surveys and by guidance personnel interviewed during the site visits was the accuracy and comprehensiveness of the information. In the RFI, vendors were requested to provide a printout of "all information which users would obtain if they used the direct access route to information about the occupation Physical Therapist" and "all information which users would obtain if they used the direct access route to information about the post-secondary institution State University of New York at Albany." All vendors provided this information.

Rating guides were prepared for both the occupational and educational institution information. For the rating guides, specific information components were identified on the basis of their usefulness and the general availability of reliable information to analyze the component. Each component was rated for comprehensivenss and accuracy on a scale of 5 to 1, "excellent" to "atrocious." Details of the method of analysis are found in the chapter, "Methodology," and in Appendix VII, Procedures and Instruments for Evaluating CIDS.

Twelve occupational and eight educational information components were analyzed. The ratings for each system on each item as well as the total score are shown in Table 19, Ratings of CIDS: Occupational and Educational Information.

Several observations about these ratings may be made. None of the systems had uniformly excellent data. All were missing or had minimal information on from six to eight components.

In general the occupational information was rated higher than the educational information. Whether this was a function of the quality of the information or of a lack of inter-rater reliability cannot be assessed. However, a letter which accompanied the ratings provided by the Office of Higher and Professional Education drew attention to a number of gaps and errors in the printouts, and urged the incorporation of the information they develop for the benefit of New York State students.

RESEARCH AND EVALUATION STUDIES

The vendors were asked to identify and describe briefly any studies of their systems which related to the validity of their instruments, the validity of their occupational data, and/or the use of their systems in secondary school classroom or group settings.

All of the vendors supplied some information in response to this question, but it varied greatly in nature. A brief summary of the response by the vendors to each of the points above follows.

C-LECT described validation of its instrument, Temperament Survey, and described how they validated occupational information through reviewers. They had no research on classroom use.

CHOICES provided a list of 37 studies and reports but no summaries nor statements of the relationship to the three points in question. In addition, a full copy of a study to assess the impact of CHOICES as an adjunct to career counseling and classroom activities was attached.

CIS described studies of the validity and readability of QUEST, the interactive search of occupation, and described their use of review panels to validate occupational information. They attached a summary of studies on the design and development of the system which had appeared in the Annual Review of Research in Vocational Education.

GIS cited research on the reliability and validity of the Career Decision-Making System, which is sold by GIS as a product for use with GIS or by itself. No further research studies were cited.

DISCOVER cited research studies related to the validation of its instruments, the validation of its information through mailings to trade or professional associations, and its impact on counseling.

COSTS

Vendors were asked to supply cost figures for three major items using a set of assumptions and a scenario described in "Methodology." The reason for the scenario was to have comparable figures for all vendors. There were three major areas in which costs were examined:

-basic system costs for delivery to user schools or agencies over three years;

-addition of State data to existing occupational information files; and

-creation of an entirely new file of State data.

Basic System Costs

Vendors were asked to provide the total cost -- license fee, software fees, training, user handbooks, etc. -- of delivering their systems for each of three years: in the first year to 100 microcomputer sites; the second year, 200 sites; and the third year, 300 sites. It is important to consider the costs for at least three years, because systems which may initially cost more often include developmental costs which then diminish with the use of the system. In Table 20, Basic System Charges for Three Years, both the breakdown of charges by individual items and the cost per year for each system can be seen.

Adding State Data to Existing Files

Comparing costs for the addition of state-developed data to existing files is even more difficult than comparing basic costs. One way of adding State data is for the State to enter them into the CIDS' software. Two of the systems, Discover and GIS, do not permit this and will not provide the source code necessary to do it. Furthermore, Discover stated that their file space was limited to 425 occupations where the scenario had called for 600. The costs for State data entry for three years are given in Table 21, System Charges for All Components for Three Years. Another way for the State to add data is to turn the information over to the CIDS. Costs for their entering the data are provided in the same table.

Creation of a File

Vendors were asked to supply their charges for incorporating and delivering a hypothetical file of JTPA program providers.

There were great differences in the cost of a new file. Cost breakdowns which were provided by all but one vendor did not shed much light on the reasons for the differences. Again, the figures provided by the vendors are displayed in Table 21.

It should be noted in examining Table 21 that the costs are not additive. For example, there would not be both the cost of vendor maintained and state maintained data. Second, activities which are not permitted by some vendors do not show up as costs, not because they are free, but because they cannot be carried out.

COPYRIGHT POLICIES AND STATE MODIFICATIONS

Each system was asked to state its policies concerning copyrights and use of State modifications to their system. A summary of their responses follows:

C-LECT: provided their general copyright notice, but did not respond to the question;

CHOICES: modifications to the system are protected by joint copyright; the State could not distribute such materials or software outside the State;

CIS: the State holds title to local modifications and may distribute them within the State; local modifications may not be distributed outside the State without the written permission of both the State and CIS; the State may also participate in joint developmental projects for national enhancements with CIS and its other operating States; CIS holds copyrights to national enhancements.

DISCOVER: modifications to Discover made at the State's

request will be copyrighted and owned by ACT
GIS: State data added to GIS remains the property of the State and cannot be released by Houghton Mifflin without the permission of the State.

Table 12

INFORMATION FROM VENDORS: NATIONAL INFORMATION

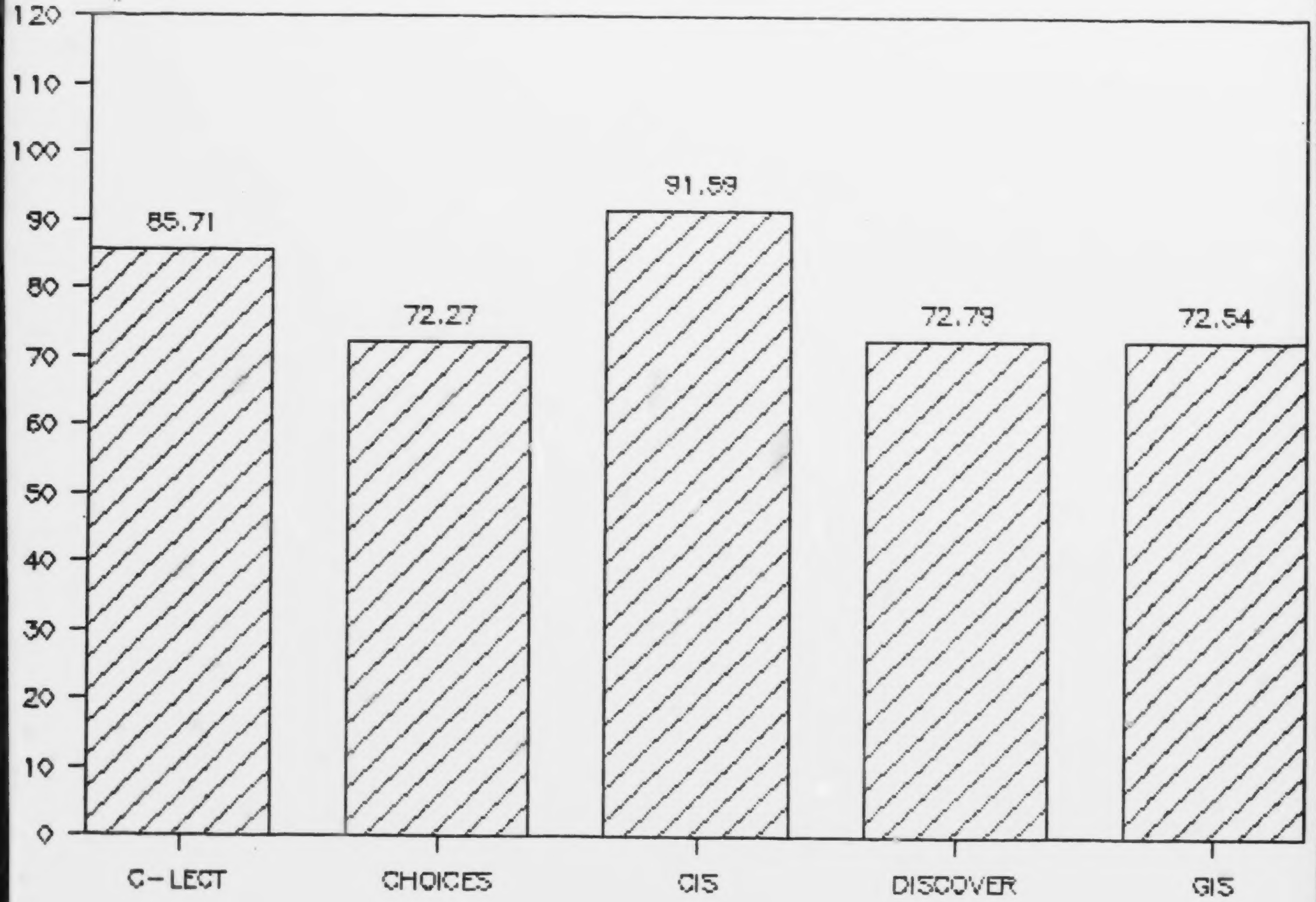


Table 13

INFORMATION FROM VENDORS: NEW YORK STATE INFORMATION

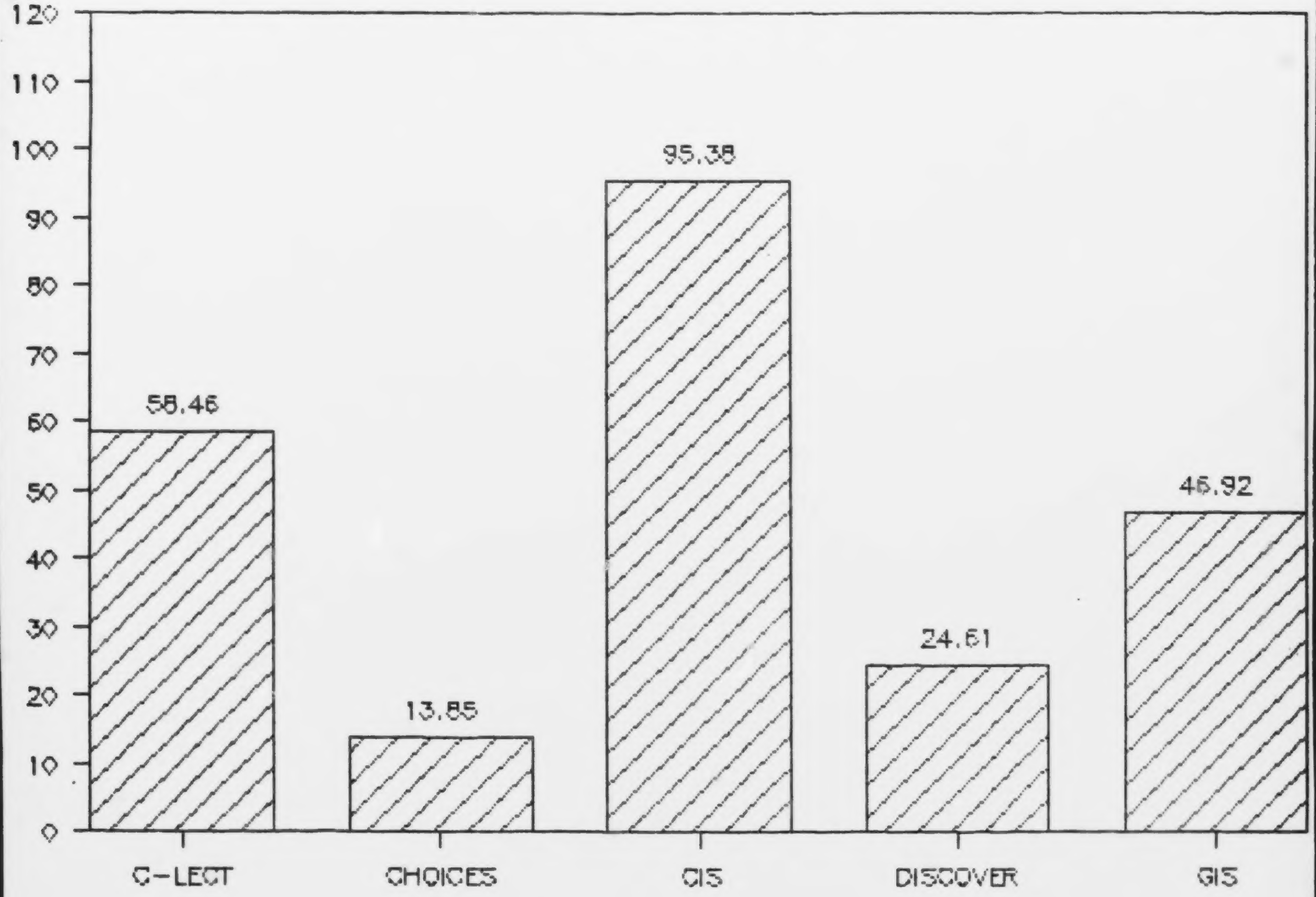


Table 14

INFORMATION FROM VENDORS: ABILITY TO ADD STATE INFORMATION

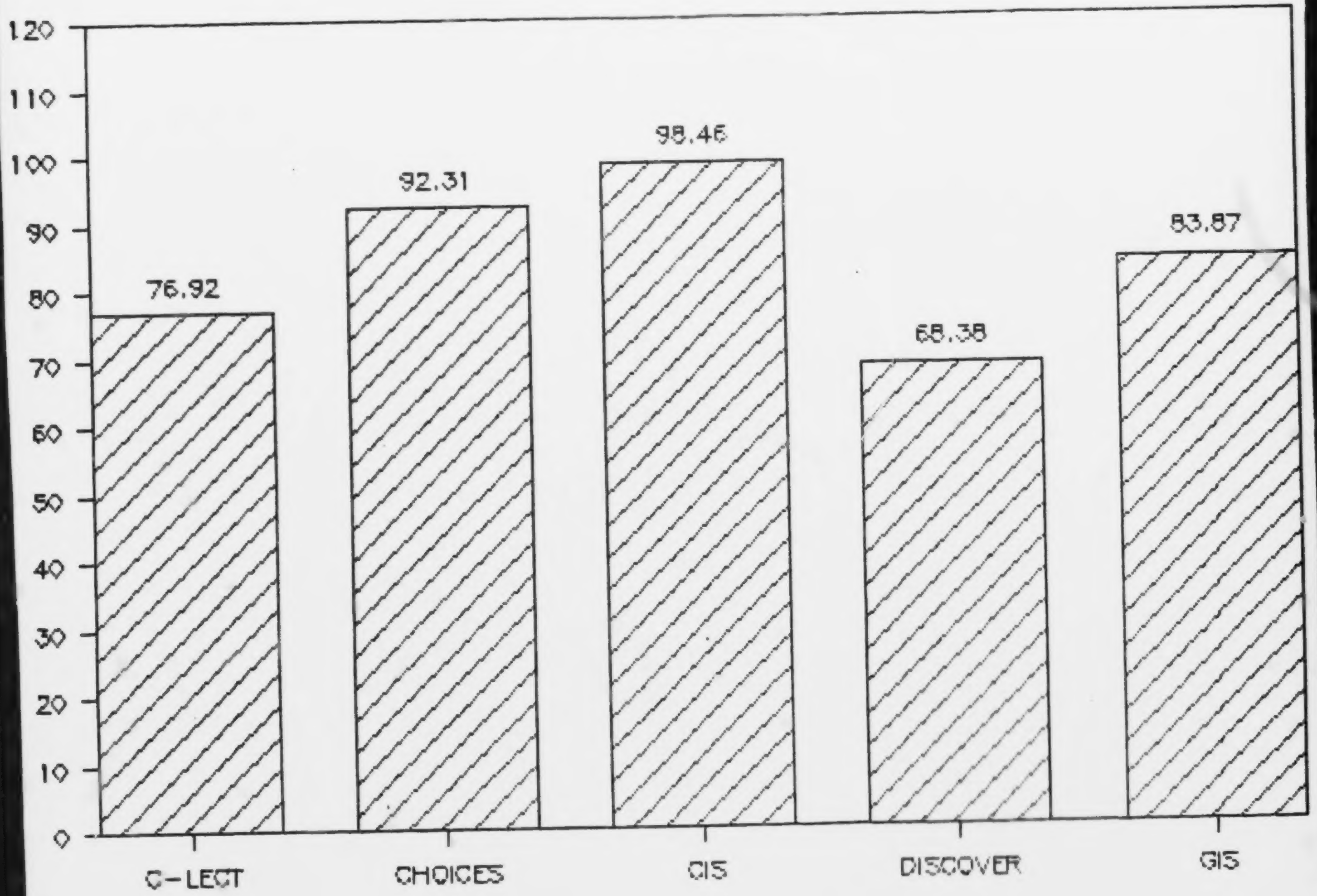


Table 15

INFORMATION FROM VENDORS: SYSTEM DESIGN CONSIDERATIONS

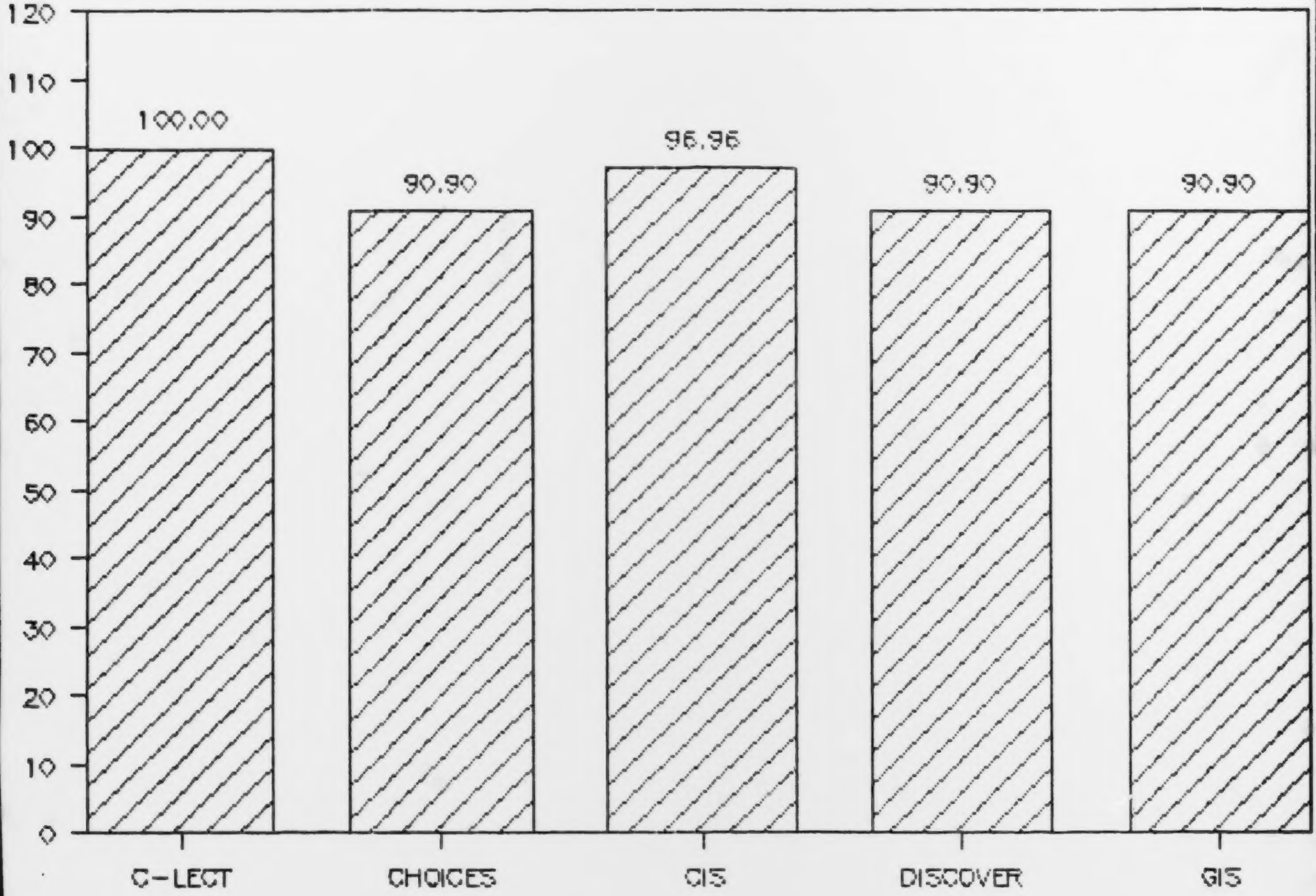


Table 16

INFORMATION FROM VENDORS: USER MATERIALS AND SUPPORT

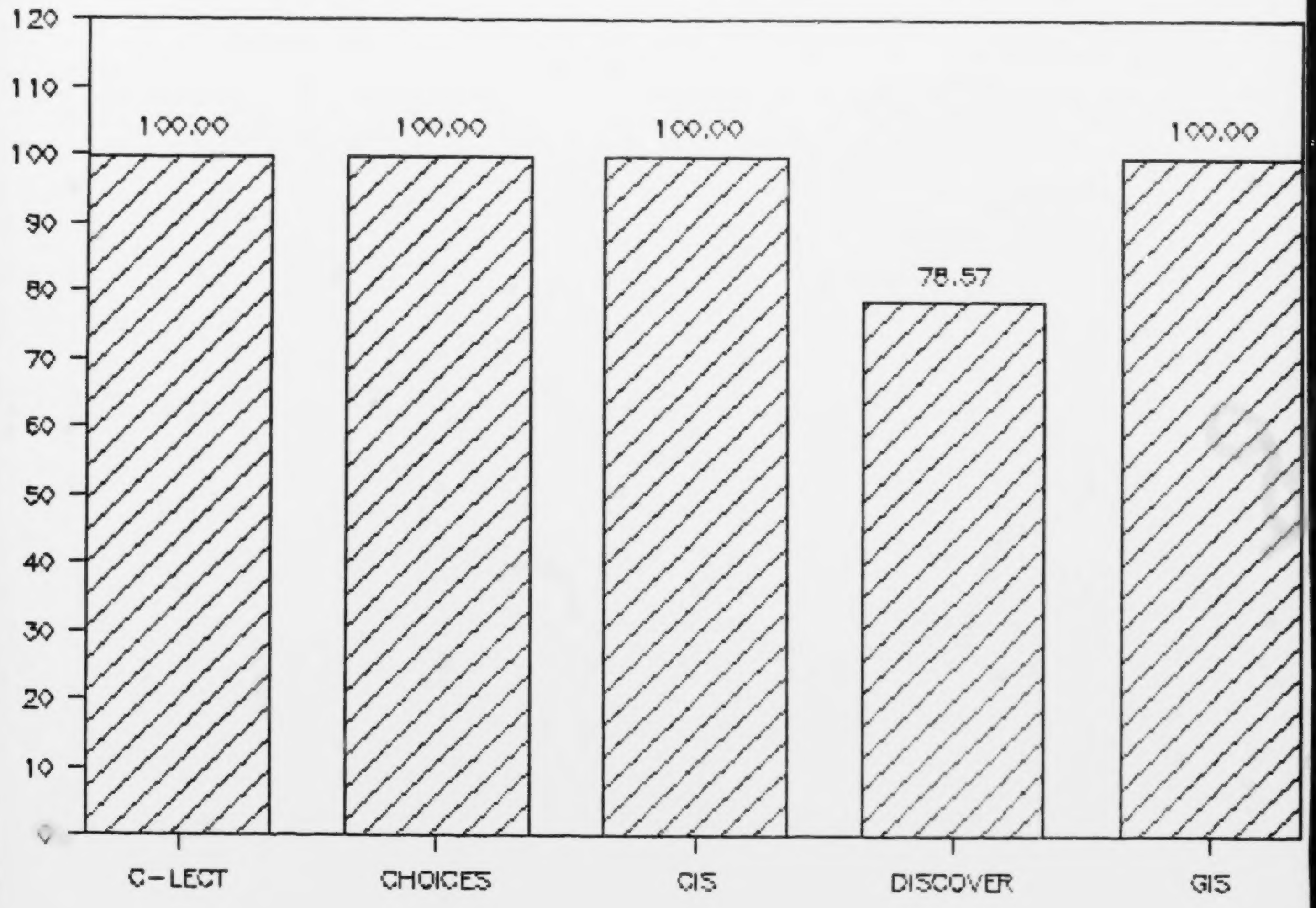


Table 17

INFORMATION FROM VENDORS: TOTAL, ALL INFORMATION

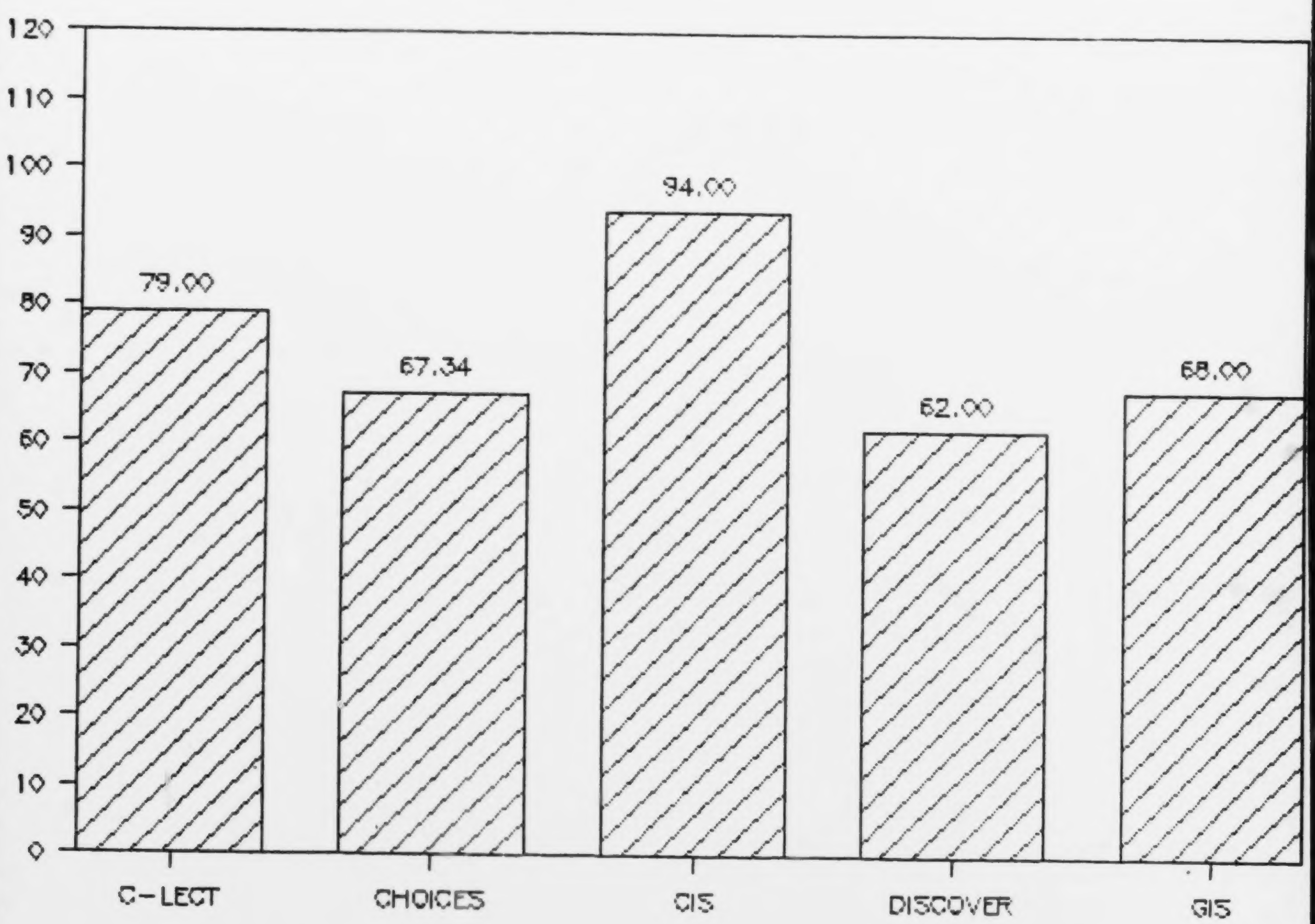


Table 18

HARDWARE VERSIONS: MAINFRAME COMPUTERS AND MICROCOMPUTERS

Computer	C-LECT	CHOICES	CIS	Discover	GIS
Apple II		X			
Apple II (HD)				X	
Apple II+ (HD)	X	X			
Apple IIe	X	X			
Apple Iie (HD)		X		X	X
Apple III (HD)					X
CDC Cyber			X		
Commodore 64		X			
DEC 10			X		X
DEC 20			X		X
DEC PDP-11			X		X
DEC VAX			X	X	X
Digital Rainbow	X				X
Honeywell 6600			X		X
HP 3000			X	X	X
IBM 3000/4000					X
IBM 36				X	
IBM AT		X	X		
IBM AT (enhanced)				X	
IBM PC		X			
IBM PC (HD)		X		X	
IBM XT	X	X	X	X	X
IBM (CMS or TSO)			X		

Table 18 Continued

Computer	C-LECT	CHOICES	CIS	Discover	GIS
NCR	X				
Prime					X
Tandy 1000 (HD)	X			X	
Tandy 1200	X			X	
Tandy 6000	X				
TI 990			X		
TRS 80/12	X			X	
TRS 80/16	X			X	
TRS 80/II				X	
Univac 90/80			X		

Table 19

RATINGS OF CIDS: OCCUPATIONAL AND EDUCATIONAL INFORMATION

Item	C-LECT	CHOICES	CIS	Discover	GIS
1. Bias free title & description	5	5	5	5	5
2. Occupational description	5	5	5	5	5
3. Job Duties	4	3	5	5	3
4. Interests & temperaments	2	5	4	5	3
5. Aptitudes	1	5	4	2	4
6. Skills, education, training	5	4	5	5	5
7. Physical demands/activities	1	5	4	3	5
8. Work conditions	0	5	5	3	5
9. Future outlook	4	4	0	4	5
10. Earnings	3	3	1	4	2
11. Related occ's & groups	3	5	3	3	5
12. Places of employment	0	3	5	5	4
13. Admission requirements	1	1	1	1	1
14. Cost	1	1	1	1	1
15. Institution type	2	4	3	4	3
16. Housing	1	2	3	2	4
17. Graduate program (in Ed)	0	1	2	2	1
18. Services for handicapped	0	0	3	2	4
19. Intercollegiate sports	-not rated-				
20. Enrollment	3	3	3	3	3
Total out of 95	41	64	62	64	68
Percent score	43.16%	67.37%	65.26%	67.37%	71.58%

Table 20
BASIC SYSTEM CHARGES FOR THREE YEARS

C-LECT

Item	Year One	Year Two	Year Three
(No cost breakdown provided)			
Totals	$ 60,200	$144,600	$260,400

CHOICES

Item	Year One	Year Two	Year Three
License fee to State	0	0	0
Site license fees	$76,000	$144,000	$212,000
Other software fees	0	0	0
Counselor training	6,000	4,000	3,000
Counselor manuals	0	0	0
Indices	0	0	0
User handbooks (500/site/year)	14,000	38,250	59,000
Totals	$ 96,000	$186,250	$274,500

Table 20 Continued

CIS

Item	Year One	Year Two	Year Three
License fee to State	$ 5,050	$ 5,050	$ 5.050
Software license fees	56,000	56,000	56,000
National information	35,000	35,000	35,000
Service center support	17,500	26,250	35,000
Indices	175	350	525
Service center management	17,500	26,250	35,000
User services	59,000	88,500	118,000
Counselor handbooks	1,500	2,000	3,000
User Handbooks (500/site/year)	7,500	12,500	15,000
Inflation @5%	0	12,595	15,128
Totals	$199,225	$264,495	$317,703

Discover

Item	Year One	Year Two	Year Three
License fee to State	0	0	0
Site license fees	$175,000	$350,000	$525,000
Other software fees	0	0	0
Counselor training	7,500	7,500	7,500
Counselor manuals	0	0	0
Indices	0	0	0
User handbooks (500/site/year)	0	0	0
Totals	$182,500	$357,500	$532,500

Table 20 Continued

Item	GIS Year One	Year Two	Year Three
License fee to State	0	0	0
Site license fees	$149,162	$295,034	$442,551
Other software fees	0	0	0
Counselor training	0	0	0
Counselor manuals	4,500	9,000	13,500
Indices	0	0	0
User handbooks (500/site/year)	97,500	195,000	292,500
Totals	$251,162	$499,034	$748,551

Table 21

SYSTEM CHARGES FOR ALL COMPONENTS FOR THREE YEARS

			Year One		
Item	C-LECT	CHOICES	CIS	Discover	GIS
Basic system	60,200	96,000	199,225	182,500	251,162
Vendor maintained State DB	75,200	5,000	10,000	0	25,485
State maintained State DB	72,700	1,500	5,000	*	*
JTPA file	70,200	10,000	8,000	20,250	12,450

			Year Two		
Item	C-LECT	CHOICES	CIS	Discover	GIS
Basic system	144,600	186,200	264,495	357,500	499,034
Vendor maintained State DB	180,400	5,000	10,000	0	15,105
State maintained State DB	174,400	1,500	0	*	*
JTPA file	168,400	5,000	5,000	20,000	6,750

			Year Three		
Item	C-LECT	CHOICES	CIS	Discover	GIS
Basic system	260,400	274,500	317,703	532,500	748,571
Vendor maintained State DB	324,600	5,000	10,000	0	19,245
State maintained State DB	313,800	1,500	0	*	*
JTPA file	303,000	5,000	5,000	30,000	8,550

*Does not provide source code for data entry.

N.B.: System charges are not additive. See discussion.

The Demonstration of CIDS to the System Review Panel

The culminating activity of the study was the presentation and demonstration of the CIDS to the System Review Panel. The panel was composed of 33 participants from appropriate State and local agencies. Six vendors were invited to participate in the demonstration. They were: C-LECT, CHOICES, CIS, Discover, GIS, AND SIGI.

SIGI withdrew from the process at midday after giving their oral presentation, but before giving any demonstrations. They were unable to operate their system on the equipment they brought. (The generosity of other vendors, particularly C-LECT, who offered to lend them equipment and who tried to help should be noted.) When the representative from SIGI drew the equipment failure to the attention of the principal investigator and asked what to do, the principal investigator suggested that SIGI could show its user materials and handbooks. At that point the representative from SIGI said they had brought none. (The need for user materials had been specified in the letter of invitation.) While machines can fail in the best planned circumstances, SIGI seemed to be experiencing several difficulties of organization the day of the demonstration. SIGI withdrew from the demonstration.

Accordingly five systems were presented orally and demonstrated to all members of the System Review Panel as described in the methodology. The panel rated the systems on 15 criteria developed from the findings of the previous surveys conducted. Each criterion was rated according to the following scale:

5 = Excellent
4 = Good
3 = Fair
2 = Poor
1 = Atrocious.

Examination of the item means for each system show that, in general, the System Review Panel found the systems between "fair" and "good." Of the 75 item means, 40 fell between 3.0 and 4.0. Only two item means fell between "poor" and "fair." The remaining 33 fell between "good" and "excellent." Table 22, System Review Panel Ratings of CIDS: Unweighted Item Means, shows the results of the computation of unweighted item means and standard deviations. The item designations have been abbreviated in the table and can be seen fully in Appendix VI.

In examining the item means and the total scores, some limitations of the system review process should be borne in mind. First, the time to view the systems was restricted. Second, there were several comments about the unevenness of the quality of the presentations by CIDS representatives. Third, some raters may have been influenced, either for or against a system, by prior experience with that CIDS.

To determine the total System Review Panel rating of each CIDS five of the items in the table were weighted twice the value of the others. They were:

3. Appeal of the system -- the extent to which it

encourages client or student use;

12. Ability of users to enter the system at their points of readiness or interest rather than at system-determined entry points;
13. Ability to use the system in group or classroom settings;
14. Overall ease of use; and
15. Overall rating.

The total results of the rating of the System Review Panel for each CIDS is presented in Table 23, System Panel Review Ratings of CIDS: Total Weighted Score. The order of the CIDS on this rating was CHOICES, GIS, Discover, C-LECT, and CIS.

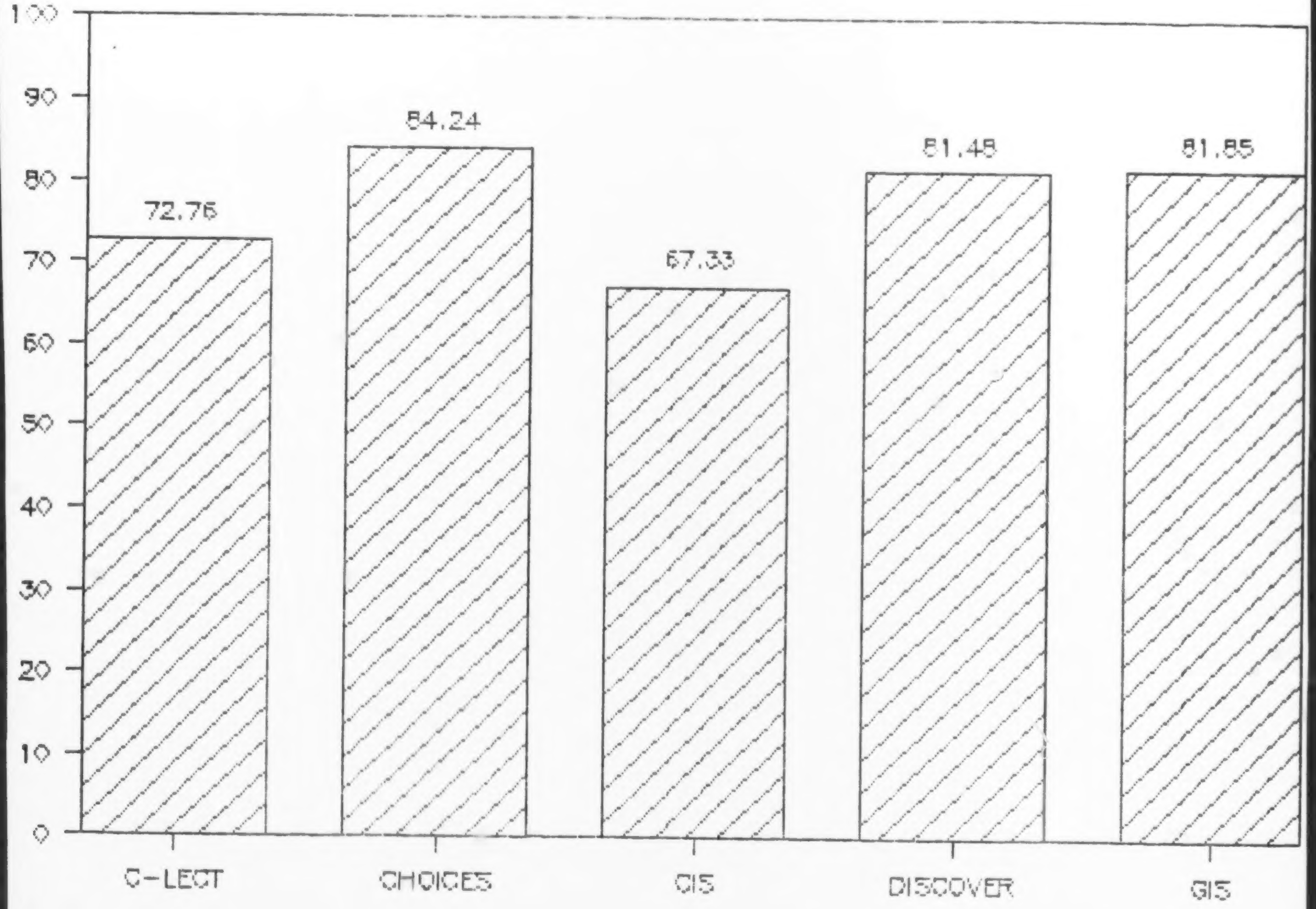
Table 22

SYSTEM REVIEW PANEL RATING OF CIDS: UNWEIGHTED ITEM MEANS

Item	C-LECT	CHOICES	CIS	Discover	GIS
Reading ease	3.58(.82)	4.79(.48)	3.30(.94)	4.36(.54)	4.03(.72)
Screen clarity	3.24(.92)	4.85(.36)	3.21(1.01)	4.42(.60)	3.91(.71)
System appeal	3.33(.92)	4.55(.61)	3.03(1.00)	4.21(.54)	3.97(.76)
User handbook	2.88(1.53)	4.40(.95)	3.33(.97)	3.18(1.36)	4.12(.91)
Search of occ's	3.88(.69)	4.39(.60)	3.42(1.05)	4.24(.78)	4.12(.81)
Movement in sys	4.24(.60)	4.12(.69)	3.79(.95)	4.49(.70)	4.30(.76)
Occ info detail	3.82(.83)	3.85(1.10)	3.64(.95)	4.18(.80)	4.24(.74)
Terminology	3.76(.74)	3.97(1.09)	3.67(.77)	3.79(.73)	3.70(1.17)
Occ to ed links	3.76(.74)	3.82(1.00)	3.61(.95)	3.70(.83	3.94(.86)
College search	3.88(.88)	3.91(1.05)	3.61(.98)	4.06(.69)	4.52(.66)
College info	3.79(.84)	3.49(1.35)	3.70(.87)	4.27(.90)	4.61(.69)
System entry	4.21(.73)	4.12(.75)	3.61(.99)	4.27(.71)	4.09(.97)
Classroom use	3.12(.81)	4.06(.89)	2.97(.94)	3.58(.92)	3.85(.96)
Ease of use	3.61(.74)	4.24(.65)	3.24(1.02)	4.21(.59)	4.09(.90)
Overall rating	3.70(.63)	4.33(.64)	3.18(.91)	4.12(.73)	4.18(.63)

Table 23

SYSTEM REVIEW PANEL RATING OF CIDS: TOTAL WEIGHTED SCORE



Conclusions and Final Ratings of the CIDs

The major purpose of this study was to identify one or more Career Information Delivery Systems that would meet the needs of New York State in implementing the occupational education curricula and guidance plans and serving populations making career plans and decisions.

The first surveys conducted, The Information Validation Survey and the Surveys of User Satisfaction along with the site visits yielded a base of information upon which the rating of systems could be carried out. This base of information was translated into three concrete measures of systems:

-information from vendors about system components and features supplied in the response to the RFI;

-an expert analysis of information on an occupation and college; and

-a system review by interested and knowledgeable professionals.

Each of the measures has its strengths and weaknesses. The response to the RFI, for example, depends upon the vendors' interpretations of the questions and their assessments of their systems. The expert analysis of information, on the other hand, depends not only upon the knowledge of the analyst, but on whether an analyst rates high or low. The rating of the System Review Panel may be influenced by the style of the presentation or previous experience with a system.

Taken together, however, the three measures balance each other and serve as stronger predictors of satisfaction with a system than any one of the measures alone. Therefore, using a basis of 100 points for each of the three measures identified above a final score was computed for each system. This gives equal weight to each of the measures. The possible 300 points of this score is then expressed as a percentage for a final system rating.

The final scores for each of the CIDS evaluated are listed in Table 24, Final Rating of CIDS: Summation of all Factors. In the table, the systems are presented in descending order of their final scores: CIS, GIS, CHOICES, Discover, and C-LECT.

It may be noted that, while specific strengths and weaknesses of the systems emerged in the findings of this study, four of the systems are very close in overall score. Second, none of the systems has a spectacularly high score. Finally, the overall scores of the systems seem to reflect the only moderate level of satisfaction that counselors expressed in their responses to the Survey of User Satisfaction.

Table 24

FINAL RATING OF CIDS: SUMMATION OF ALL FACTORS

Rank	System	Contents	Information Accuracy	Review Panel	Final Score
1	CIS	94.00	65.26	67.33	75.53
2	GIS	68.00	71.58	81.85	73.81
3	CHOICES	67.34	67.37	84.24	72.98
4	Discover	62.00	67.37	81.48	70.28
5	C-LECT	79.00	43.16	72.76	64.97

Chapter Five
ANCILLARY ISSUES

During the course of this study several issues emerged which had not been anticipated in the original plan, nor identified in the earlier request for proposal from the State. These issues, and the events related to them, are discussed in this chapter. The issues are:

-compliance of the CIDS with civil rights legislation;

-communication between the State Education Department and local people responsible for securing and using computer-based career information delivery systems;

-the relationship between planning for CIDS and other computer planning at the State Education Department; and

-the emergence of related computer-based systems.

Compliance of the CIDS with Civil Rights Legislation

During the study the investigators learned that questions regarding the compliance of C-LECT with civil rights legislation and court decisions had been raised by the Office of Occupational Education Civil Rights Coordinating Unit (OECRCU). These questions had come about as a result of a routine compliance visit to a school district using the system.

To learn more about the matter, a meeting was initiated by the principal and associate investigators with Dr. Karl Wittman, Program Manager. In the meeting, it was learned that after the visit to the school district, C-LECT had been further reviewed, at their request by members of the OECRCU, and that they were in the process of correcting the problems identified. It was also learned that no other CIDS had been thoroughly reviewed by the OECRCU.

Dr. Wittman felt that understanding of C-LECT had been facilitated by the fact that it was demonstrated by its representatives directly to the OECRCU. It was, therefore, decided to take advantage of the opportunity provided by the vendors being in Albany for the system demonstration. Each vendor would present the CIDS to a team from the OECRCU. Since the demonstration day was to be very full of activities, it was decided to use the days immediately preceding and following June 24th for the civil rights review. It was understood that this review would be carried out by members of Dr. Wittman's staff using their criteria for civil rights compliance, and would not take place during the system demonstration on June 24th nor deal with the same issues.

Since this activity had not been part of the original study, it was reviewed by Barbara Shay, designated liaison to the State Education Department and a member of the project oversight committee, who approved it. Accordingly, along with the Request for Information and invitation to participate in the System Review Panel demonstration, the vendors were sent information regarding the planned review by compliance unit. Each system was asked to send its user's manual, counselor's manual, descriptive brochure, and, optionally, a description of any components designed specifically for use with special populations to the OECRCU.

It was understood by Dr. Wittman that the report of the OECRCU would become a part of this report. That report has not been received. An unofficial conversation with a member of the OECRCU indicated that no problems had been identified with any of the systems, and correspondence from C-LECT indicates that any problems had been rectified.

Communication Between the State and Local Users

Some concern was expressed by people in local educational agencies and regional computing centers that they had not been made aware of the study. The sense they communicated was that not only were they not aware of this study, but information on actions by the State Education Department which should have an effect on their selection or use of CIDS was not always available, nor was it available in a timely manner.

In the case of this study, which had very short timelines, the people who were aware of the study at all learned about it as it was happening. However, the concerns expressed do have implications for future actions.

There are at least two major groups within the State educational community which should be informed of the results of the CIDS evaluation and of the actions the State will be taking as an outcome of the study. One group is the network of people from the regional computing centers. They seem to be the key players in decisions regarding the purchase or lease of computer software. Certainly, the State would benefit from coordinated activities of the centers in purchasing. To some extent, this already takes place in the leasing of GIS.

During this study, a visit was made to the Onondaga-Madison BOCES regional computing center in Syracuse to discuss the role of computing centers in distributing CIDS. There are 14 regional computing centers throughout the State serving the BOCES and many of the school systems in their regions. The centers deliver on-line and microcomputer software to schools.

Presently, CIDS vendors deal directly with these centers and the BOCES. When a school orders a CIDS, the product is delivered through the centers back to the school. Each center has a person on staff designated as a trainer for the systems. It appears that these people are basically computer experts who receive training on CIDS from the vendors and, in turn, train the counselors. These system trainers should have been identified early in this study and been involved in the system review process.

It should be noted that some school systems do not use the services provided by the regional computing centers. Instead, they obtain, deliver, and arrange for training on systems independently. This situation underscores the need for coordination and communication between the State and local users.

The second group is guidance counselors. They are the most influential people in the actual use of the systems. It is recommended that information about CIDS be disseminated to these groups through special staff development workshops or through presentations at their regularly held meetings.

Computer Planning

In the State Education Department, planning is currently in progress for a model of computer use which combines distributed computing with the ability to have data input to powerful small, local computers from a large, regional database depository (A Primer in the Methodology of Systems Analysis for Application in Categorically Aided and Other State Programs, 1985.)

If the State were to choose to enter its own data in the CIDS being used, it would seem desirable to investigate the feasibility of using this network to do so. Possible connections should be explored.

Related Computer-Based Systems

During the course of the study other computer-based systems which assist people in some phases of career planning were brought to the attention of the investigators. These included the Ability Information System being used by the Worker Reemployment Center of the Buffalo and Erie Private Industry Council, Inc.; an interactive video disk system, College USA; and a similar system called, Passport to Your Future. While none of these systems were identified for inclusion in the study, and they are different in scope and focus from the computerized career information systems studied, they might be of interest to a school or agency considering the use of computers to provide career information. In some cases they might be seen as additions to a CIDS.

In addition to the systems named above, other systems known to the investigators were not included in the study because they were not in use in New York State, in particular, the computerized version of COIN.

Finally, it is clear that more and more systems will emerge in the competitive environment that exists in all areas of school sales. Therefore, the study recommendations will include provisions for examining and rating the quality of other systems.

Chapter Six
SUMMARY AND RECOMMENDATIONS

Summary

The purpose of this chapter is to present the long view of what the findings of the study tell us New York State should do to provide computerized career information to the schools implementing the occupational education curricula and guidance plans as well as the schools and agencies serving all the populations involved in the various stages of career planning.

At the inception of the study five questions were asked: The first question was: "What is needed in a computerized system to meet the career information needs identified for New York State?" The second question was: "What systems are already being used in the State, how effective and well liked are they by their users, and what gaps are there in those systems?" The third question was: "What can vendors of systems offer New York State to help meet its needs?" Fourth: "How much will that cost the State, comparatively?" The final, and ultimate, question was: "Given the answers to the four questions, what steps should the State take to adopt or develop one or more career information systems to provide national and State information to the broad-based user community?" A series of activities were carried out to answer the questions.

The first question was answered through a review of the literature which yielded a list of 85 information components and design considerations which were validated through the responses of the national and state panels of experts to the Information Validation Survey.

Surveys of User Satisfaction of principals, counselors, students, and parents confirmed and enlarged the list. In general, these surveys showed that the CIDS were being used in the schools primarily for guidance with some classroom and group instruction activities. The students' responses showed that they found the systems easy and enjoyable to use and more useful for information gathering than for career decision making, thus, indirectly, supporting the idea that a career information delivery system is a resource to be used as part of an overall career guidance or education program. The parents' responses showed that they strongly supported the use of computerized systems in their schools and the use of computers for career information delivery and exploration, but not for values clarification. Counselors were highly supportive of computerized career information, but only moderately satisfied with the systems they had. Counselors expressed particular concerns with the quality and timeliness of the information in the systems and the adequacy of the training. From these surveys and the site visits, strengths and weaknesses of the systems in use were identified and the second question was answered.

The third question, what can the vendors offer New York State, was approached several ways. Five of the six major CIDS in use in New York State responded to the lengthy Request for Information, provided printouts of occupational and educational which was analyzed for comprehensiveness and accuracy, and demonstrated their systems to a review panel. A process for rating the CIDS taking all of this into consideration was developed and used for measuring the part and total value of each system. While different systems excelled or were weak in different aspects -- information components contained, system design considerations, user support materials, information comprehensiveness, rating by the System Review Panel -- the final analysis showed that four of the systems rated satisfactory (in descending order: CIS, GIS, CHOICES and Discover) and one (C-LECT) just passing. This confirmed the counselors' levels of satisfaction, or dissatisfaction, with the CIDS in use. It can be said that all of the CIDS showed room for improvement.

While costs were not analyzed as part of the total rating system, they were gathered through the RFI and comparative analyses presented. The analysis showed large variations in basic system delivery, developmental, and total costs. It also revealed important differences among the CIDS in such issues as entry and ownership of state developed data and files.

While the study was in progress, other issues came to the fore. They included: issues related to the compliance of the CIDS with civil rights legislation and judicial decisions; the need for communication with CIDS system trainers in the regional computer centers and with guidance counselors; the possible links that can be made with other computer planning taking place in the State Education Department; and the continuing emergence of new computerized career information delivery systems.

The findings of the activities led to some answers to the final question. These answers are presented as the recommendations which follow.

Recommendations

The recommendations take into consideration a number of factors. First, there was a high degree of general support for computerized career information delivery systems expressed by the various user communities. Second, although there were weaknesses identified in the systems, there was generally more satisfaction than dissatisfaction, and there has been a varying degree of investment of resources in each of the CIDS by schools and agencies within the State. Third, the greatest area of dissatisfaction could be interpreted as a hue and cry for more accurate, more up-to-date, and more specific occupational and educational information. Fourth an analogy to the tradition in New York State for approved, rather than adopted texts, may be drawn to educational software, and thence to CIDS. There are eight recommendations.

1. The State should pursue the development and utilization of career information delivery systems.

2. No single system should be adopted. Instead, systems should be rated and, if satisfactory, approved.

3. Some meaning should be ascribed to the fact that a systems is approved. Perhaps use of those systems could be eligible for VEA funding or other assistance.

4. The five systems rated for the study (C-LECT, CHOICES, CIS, Discover, and GIS) should be approved. (SIGI, which did not complete the process, and any other systems should not be considered approved until they are rated.)

5. The process for system approval and the related rating sheets presented

in Appendix VII, Procedure and Instruments for Evaluating CIDS, should be adopted as the process for approving systems. This process includes an evaluation of information supplied by the vendor, an analysis of the comprehensiveness and accuracy of information supplied on the vendor's sample printouts, and a rating of an actual demonstration by interested and knowledgeable users.

6. Activities such as staff development workshops and printed communications should be undertaken as soon as possible to inform those responsible for buying and using CIDS of the results of this study, particularly of which systems are approved and of how to rate other systems. This user community includes: school and school district administrators, agency heads, counselors, regional center coordinators, and appropriate professionals in the State Education Department.

7. In view of the strong need for more accurate, up-to-date and specific occupational and educational information, sufficient resources must be provided by New York State to its agencies to establish or upgrade the primary data series needed for the CIDS. Although a great deal of information is already collected by these agencies, they do not have as their primary audience the user community that the CIDS serves. The information validation survey and the surveys of user satisfaction give strong indications of information components needed and the level of detail appropriate to the user audience.

8. The function of coordinating and continuously improving career information delivery should be focused in one location. A unit, the Career Information Delivery System Coordinating Office (CIDSCO) should be created in the State Education Department where a strong network of users already exists.

Six functions are recommended for the CIDSCO:

A. The CIDSCO should develop state career information including information about: occupations, secondary areas of concentration, post-secondary educational programs, colleges and universities, proprietary schools, financial aids, and scholarships. It must be stressed that a separate unit be responsible for this although a great deal of the information is already collected by the responsible State agencies because these agencies do not have as their primary audience the user community which the CIDS serve. In some cases the collected data needs to be clustered because it is too detailed for an individual's use. In other cases, needed information is not collected. For example, the Office of Higher and Professional Educations was not able to supply information on intercollegiate sports at a SUNY school. However, this information is considered very important by some, particularly those dealing with inner-city youth. The CIDSCO would, therefore, work in conjunction with other agencies responsible for primary data collection.

B. The CIDSCO should be responsible for seeing that the information is incorporated in the approved CIDS. There are two options for doing this. It can be entered by the State or turned over to vendors for entry. It is strongly recommended that the State enter this data itself despite the fact that two of the approved systems do not currently allow this. The State should negotiate this right with a one-time fee to those systems along with assurances that no inappropriate changes in the database will be made. There are two reasons for the State's entering, as well as developing, the data: first, there will be greater control over the accuracy and timelines of information delivery; second, interpretations of information that will have to be made will be made consistently across all systems. (It should be noted that entering data oneself is not free. While money will not have to be paid to vendors, it will have to be paid to people entering the data.)

C. The CIDSCO should provide computer expertise in CIDS management and development. Some systems are narrative-based, others attribute-based. Most use some form of data crunching. Software will have to be developed and refined to accommodate the data entry. Where possible, this should be coordinated with other units planning computer networks in the State. In addition, as new technology is developed, CIDS will be available to take advantage of it. The CIDSCO should be in the forefront of identifying new developments, in particular computer technology that will enable people with handicapping conditions to get career information.

D. Since we clearly have not seen the end of new CIDS on the market, the CIDSCO should be responsible for rating and approving other CIDS using the process outlined in Appendix VII.

E. The CIDSCO should negotiate procurement contracts with all approved CIDS so that all schools and agencies in the State are charged uniformly for the same products and services and so that the State may take advantage of bulk purchasing rates. There is some model for this in the State with GIS and the Onondaga-Madison BOCES as well as with CIS and the New York Board of Education.

F. The sixth function of the CIDSCO is information dissemination and staff development regarding CIDS. Initially, it is recommended that they be responsible for letting schools and agencies know which systems are approved and how to get approval for other CIDS. In addition, while training is provided by vendors in the uses of their systems, the CIDSCO should provide staff development to leaders in the occupational education and guidance communities on the general uses of CIDS to implement curricula and guidance plans.

Obviously, not all of these recommendations can be carried out immediately. However, there are first steps that can be taken while funding for the CIDSCO is sought and the unit is established. First, the findings of this study can be disseminated to a broad base of occupational education, guidance, and agency personnel. Second, priorities of information development can be established based on this study, the work of CIDS in other states, and the availability in occupational and educational information in New York State.

With the establishment of the CIDSCO, New York will take the best possible approach for serving CIDS users across the state. First, by providing accurate and up-to-date career information to a wide range of users, the State will be performing a much needed service, one that will not only be of value to its individual citizens, but that will contribute to the economic health of the State and its regions. Second, while maintaining quality control of the information and setting standards for delivery, the State will be supportive of local decisions to meet local needs and preferences. This innovative approach to computerized career information delivery is particularly appropriate to the size, diversity, and resources of New York State.

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Appendix I

INFORMATION VALIDATION SURVEY:
INSTRUMENT AND RELATED MATERIALS

A. Information Validation Survey
B. Memorandum to New York State and National Experts in Career Guidance
C. Memorandum to Major Providers of Occupational Education
D. Excerpts from Three New York Occupational Curricula Guides
E. Excerpts from "District Guidance Plan: Implementing Commissioner's Regulation 100.2 (j)"

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INFORMATION VALIDATION SURVEY

FULL NAME ____

TITLE ____

INSTITUTION ____

BUSINESS ADDRESS ____

CITY ____________________________ STATE ____________ ZIP _______

BUSINESS TELEPHONE ____

SURVEY DIRECTIONS

The purpose of this survey is to validate information and system needs for a computerized career information delivery system (CIDS) to serve a broad-range of users. These needs include: (1) to help implement three occupational education curricular programs (Home and Career Skills, Introduction To Technology, and Introduction to Occupations) in New York State; (2) to complement implementation of guidance plans; (3) to assist career and educational planning by individuals in such groups as junior and senior high school students, out-of-school youth, community and technical college students, handicapped workers, and other adults.

Please consider each of the components on the survey in light of the needs listed above. (Excerpts from the curricula and the guidance plan guidelines are attached for your information.) It is important to note that the curricula are mandated for students in seventh, eighth, and ninth grades.

The 85 items on the survey are divided into three categories: Occupational Information, Education and Training Information, and System Design Considerations. The items in each category have been identified as the result of a review of the literature and an analysis of the career information needs for the curricula and guidance plan guidelines. Next to each item in each category is a scale from 5 to 1, with "5" representing "Highly Desirable, definitely include in a computerized career information delivery system" and "1" representing "Highly Undesirable, definitely do not include in a computerized career information delivery system".

Please complete the identifying information at the top of this page and place your name at the top of each subsequent page.

SURVEY

I. OCCUPATIONAL INFORMATION

A. Information Components Related to Specific Occupations

	Highly Desirable	Desirable	Neither Desirable Nor Undesirable	Undesirable	Highly Undesirable
1. Occupational title with identifying code	5	4	3	2	1
2. Occupational description	5	4	3	2	1
3. Occupational group or cluster	5	4	3	2	1
4. Job duties	5	4	3	2	1
5. Interests (of workers as validated in various studies)	5	4	3	2	1
6. Aptitudes	5	4	3	2	1
7. Temperaments	5	4	3	2	1
8. Entry level skills required for job	5	4	3	2	1
9. Physical demands (amount of weight the worker must lift or carry)	5	4	3	2	1
10. Physical activities	5	4	3	2	1
11. Tools, equipment, etc. used on the job	5	4	3	2	1
12. Environmental/work conditions	5	4	3	2	1

INFORMATION VALIDATION SURVEY NAME________________________

	Highly Desirable	Desirable	Neither Desirable Nor Undesirable	Undesirable	Highly Undesirable
13. Hours of work and travel required on the job	5	4	3	2	1
14. Industries in which occupations occur (places of employment)	5	4	3	2	1
15. Hiring channels	5	4	3	2	1
16. Career ladders and advancement opportunities	5	4	3	2	1
17. Occupational outlook	5	4	3	2	1
18. Current and future occupational supply and demand	5	4	3	2	1
19. Current employment (numbers, by occupation by industry)	5	4	3	2	1
20. Earnings and benefits (beginning, average, range, fringe benefits)	5	4	3	2	1
21. Education/training required	5	4	3	2	1
22. Licensing, certification, tests, etc. required	5	4	3	2	1
23. Helpful secondary school subjects	5	4	3	2	1
24. Related occupations	5	4	3	2	1
25. Related military occupations	5	4	3	2	1
26. Sources of additional information	5	4	3	2	1

B. Information Components Related to Labor Market Entry

27. Job seeking skills	5	4	3	2	1
28. Self-employment and entrepreneural information	5	4	3	2	1

II. EDUCATIONAL AND TRAINING INFORMATION

A. Information Components Related to Secondary Areas of Concentration

29. Area of concentration description	5	4	3	2	1
30. Area of concentration group or cluster	5	4	3	2	1
31. Typical course work	5	4	3	2	1
32. Types of learning activities	5	4	3	2	1
33. Skills and knowledge acquired	5	4	3	2	1
34. Related entry level occupations	5	4	3	2	1
35. Related occupations requiring further study	5	4	3	2	1
36. Related post-secondary programs	5	4	3	2	1

B. Information Components Related to Post-Secondary Educational and Training Programs

37. Program description	5	4	3	2	1
38. Program group or cluster	5	4	3	2	1
39. Typical course work	5	4	3	2	1
40. Types of learning activities	5	4	3	2	1

INFORMATION VALIDATION SURVEY NAME________________________

	Highly Desirable	Desirable	Neither Desirable Nor Undesirable	Undesirable	Highly Undesirable
41. Skills and knowledge acquired	5	4	3	2	1
42. Certificates or degrees earned	5	4	3	2	1
43. Normal length of time to complete certificate or degree	5	4	3	2	1
44. Related occupations	5	4	3	2	1
45. Related programs of study	5	4	3	2	1
46. Type(s) of institutions offering program	5	4	3	2	1

C. Information Components Related to Educational and Training Institutions

47. Name and address of educational or training institution	5	4	3	2	1
48. Geographic location	5	4	3	2	1
49. Type of institution	5	4	3	2	1
50. Admission Requirements (test scores, application procedures, application deadline, fees, physical exam, etc.)	5	4	3	2	1
51. Name and address of admissions contact person	5	4	3	2	1
52. Cost (in-state and out-of state tuition, room, board, fees)	5	4	3	2	1
53. Housing (availability, on-campus, off-campus, percent of undergraduates living on campus, required of freshmen, etc.)	5	4	3	2	1
54. Financial aid information (sources, application procedures, application deadline, average award, etc.)	5	4	3	2	1
55. Name and address of financial aid contact person	5	4	3	2	1
56. Education and training programs offered	5	4	3	2	1
57. Types of certificates or degrees awarded	5	4	3	2	1
58. Normal length of time to complete certificates/degrees offered	5	4	3	2	1
59. Special programs available (cooperative education, adult basic education, foreign study, ROTC, etc.)	5	4	3	2	1
60. Library and learning center facilities information	5	4	3	2	1
61. Support services available (counseling, learning lab, placement)	5	4	3	2	1
62. Services for handicapped (housing and building access, designated parking, interpreters for the deaf, tutors, learning aids, counseling, registration assistance, transportation for the mobility impaired)	5	4	3	2	1
63. Intercollegiate sports offered (by sex and availability of scholarships)	5	4	3	2	1
64. Accreditation information	5	4	3	2	1

D. Information Components Related to Major Sources of Financial Aid and Scholarships

65. Name	5	4	3	2	1
66. Eligibility requirements	5	4	3	2	1
67. Application procedures and deadline	5	4	3	2	1
68. Size or basis of award	5	4	3	2	1
69. Name and address of contact person	5	4	3	2	1

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INFORMATION VALIDATION SURVEY NAME________________________

	Highly Desirable	Desirable	Neither Desirable Nor Undesirable	Undesirable	Highly Undesirable
70. How to obtain additional information	5	4	3	2	1
III. SYSTEM DESIGN CONSIDERATIONS					
71. Interactive structured search of occupations by such elements as interests, temperaments, values, and skills previously acquired	5	4	3	2	1
72. Ability for users to query the system as to why specific occupations did not appear on their lists	5	4	3	2	1
73. Direct access to information about occupations	5	4	3	2	1
74. Direct access to information about secondary areas of concentration	5	4	3	2	1
75. Direct access to information about post-secondary educational and training programs	5	4	3	2	1
76. Interactive structured search of educational institutions	5	4	3	2	1
77. Direct access to information about educational institutions	5	4	3	2	1
78. Ability to match institutions and educational programs	5	4	3	2	1
79. Links to published assessment instruments	5	4	3	2	1
80. Ability to use occupational characteristics to sort for similar occupations	5	4	3	2	1
81. Interactive structured search of financial aid information	5	4	3	2	1
82. Ability of the system to operate on a microcomputer	5	4	3	2	1
83. Ability of clients to walk away from a session at the computer with a printed record of searches and information received	5	4	3	2	1
84. Ability to add state specific occupational and educational information to existing records	5	4	3	2	1
85. Ability to create records for new and emerging occupations and training programs	5	4	3	2	1

List below, by category, any additions to or comments on the items on the survey. Attach additional pages if necessary.

I-A

I-B

II-A

II-B

II-C

III

PLEASE RETURN YOUR COMPLETED SURVEY BEFORE APRIL 30, 1986 TO:
Dr. Deborah P. Bloch
Box 20369
Cherokee Station Post Office
New York, New York 10028-9991

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Deborah Perlmutter Bloch, Ph.D.

MEMORANDUM

TO: New York State and National Experts in Career Guidance

FROM: Deborah Perlmutter Bloch
Joyce Ford Kinnison

RE: Information Validation Survey

We appreciate your willingness to complete the attached Information Validation Survey. The information you will provide is essential to the study currently being conducted to determine the career information delivery system best suited to meet the needs of the people of New York State.

One activity in this study is the identification of the information needs of the many groups and individuals whom the system will serve. To accomplish this, career information components and system design considerations have been identified through an extensive review of the literature and an analysis of the new Occupational Education Curricula and the requirements for district guidance plans for the State.

The purpose of this survey is to validate the findings of the review and the analyses, and to see whether experts in the field find some of those components more desirable than others.

For your information, selected materials from the curricula guides and the guidance plan guidelines are enclosed with the survey. Please return only the completed survey before April 30, 1986. An envelope is enclosed for your convenience.

If you have questions, call Dr. Bloch at (212) 794-1098 or Ms Kinnison at (919) 469-0081.

Thank you for your cooperation.

Deborah Perlmutter Bloch, Ph.D.

MEMORANDUM

TO: Major providers of occupational education

FROM: Deborah Perlmutter Bloch
Joyce Ford Kinnison

RE: Information Validation Survey

The attached survey is to be completed by someone in your organization who is familiar with the career information needs of the students you serve. This could be a Director of Guidance, a Director of Occupational Education Programs, a counselor, an occupational education teacher, or an administrator. We depend on you to select the person best qualified to complete the survey.

This survey is part of a study currently being conducted to determine the career information delivery system best able to meet the needs of the people of New York State. A letter which explains the study from James A. Kadamus, Assistant Commissioner for Occupational and Continuing Education, New York State Education Department, is attached.

Please give the survey and the enclosed materials to the person you select, and ask them to return only the completed survey before April 30, 1986. An envelope is enclosed for your convenience.

Thank you very much for your cooperation.

EXCERPTS FROM THREE NEW NEW YORK OCCUPATIONAL CURRICULA GUIDES

The three occupational education curricular programs examined here are being pilot tested in New York State during the 1985-86 school year. They are: Home and Career Skills for students in grades seven and eight; Introduction To Technology for students in grades seven and eight; and Introduction To Occupations for students in grades nine and ten.

Even though the structure of the programs may change as a result of the pilot tests, occupational information will still be needed to meet the overall goals of the program. Therefore, in order to present the broadest picture possible, the following discussion about data elements required to compliment the programs includes both general analysis of needs and specific needed data.

Home and Career Skills

There are three broad objectives for this program, which is mandated for all students in the seventh and eighth grades. The first is to "Develop skills which lead to effective decision making, problem solving, and management in the home, school/ community, and workplace" (page 4).

One of the areas to which the principles and process skills are to be applied in teaching this program is:

> Career Planning--an overview of work, tentative plans, and entrepreneurship...Career Planning gives students the chance to begin making decisions and solving problems related to tentative career plans (page 4).

The 'Career Planning' segment of the course "provides an opportunity to anticipate the future, identify employable traits, examine oneself in relation to the work environment, and to explore career opportunities". It further asserts that "Application of the decision making process encourages students to form tentative career plans" (page 114).

Three of the seven competencies to be achieved are:
2. Identify personal characteristics which lead to job satisfaction
3. Formulate personal criteria for career planning
4. Apply the process skills to develop tentative career plans (page 115).

Scattered throughout this 'Career Planning' section are activities which require the student to use occupational and career information to meet goals. Seven examples of these are:

> (1) 3. Describe characteristics of work involving various work locations and conditions, work personnel, and work time or hours...Several work characteristics/environments are suggested..."
>
> You would like to work:
> -for people caring and serving
> -with data, facts, and records

-with ideas, theories, and thought
-with things, machines, and tools
-outside most of the time
-inside most of the time
-with other people
-as "boss" with responsibility for others
-following directions given by others
-where you'd get dirty
-where there's lots of noise
-where it is quiet and calm
-where you have many decisions to make doing physical labor
-where the work would be dangerous
-where you would help others
-where you earn lots of money
-where you earn lots of money doing something you don't like
-designing and creating things
-doing the same thing over and over
-at home on a flexible schedule
-where you need to take work home
-on a flexible schedule
-on "off peak" hours (page 118)

(2) 1. Given related checklists and evaluation aids, the student will apply the processes of decisionmaking, problem solving and management to personal career planning, with a degree of understanding acceptable to the instructor.

In order to do this, the student must be able to:
a. Identify areas of personal interests, abilities, and aptitudes
b. Identify personal skills (mental, physical, emotional, social)
c. Identify personal attitudes an values toward work, training/education, and life styles
d. List home, school, and work experiences which contribute to career selection
e. Formulate criteria for personal career planning (page 122)

(3) 2. After preparing criteria for personal career planning, the student will use the decisionmaking process to formulate tentative career plans...

In order to do this, the student must be able to:
a. Identify and use available career resources to obtain information about careers and employment trends
b. Identify career clusters and opportunities for the development of transferable skills
c. Match career characteristics and personal characteristics to serve as a guide in career decisionmaking
d. Formulate a personal tentative career plan which includes short-range and long-range steps needed to carry out the career plan (page 122)

(4) 1. Students identify characteristics about themselves which will allow them to select appropriate careers:

-interests, activities providing enjoyment
-abilities, talents, aptitudes, skills

-values, job satisfactions, experiences
-freedom to make decisions and take responsibility
-companionship, working with others
-self-esteem, creativity
-self-direction
-self-approval, pride
-etc. (page 123)

(5) 9. Have students match their personal traits, interests, values, and aptitudes with job tasks, requirements, preparation, and benefits (page 124).

(6) 17. Help students group job titles into workable size units for exploration. Emphasize the importance of preparing for a career cluster instead of a specific job... (page 126).

(7) 18. Have students practice writing a resume (page 126).

Introduction to Technology

The first half of this program is designed to introduce students in grade seven to the nature of technology and its use in satisfying people's needs and wants. The second half, for students in grade eight, focuses on (1) technological concepts, (2) technical processes, (3) methods people can use to control technological concepts and processes, (4) technological career opportunities, and (5) implication of technology to individuals and society.

A major theme occurring throughout the activities of Introduction to Technology in grade 7 is:

> Career Related Information
> Information about career opportunities should be infused wherever appropriate. It should be stressed that technology has affected all jobs, not just those in "high-tech" areas. The student should be made aware at all times of employability skills such as dependability, honesty, punctuality, reliability, responsibility, ability to work with others, pride in work, self-awareness, self-reliance and self-worth (Grade 7 Syllabus, page 6).

The use of occupational information in instructional strategies is also stressed throughout this syllabus. Specific uses include **career awareness** (defined as "a variety of experiences in which students learn about various career clusters, work requirements and job-readiness skills") and **career exploration** (defined as "investigating the necessary preparation, opportunities for jobs and potential for reward and fulfillment in various careers one might attempt to enter.") **Decision making**, "the process of identifying, analyzing and choosing among alternatives, then acting on and evaluating the results of the choice,") is also an activity for the course (Glossary, pages 2-3.)

The use of occupational information for career exploration and decision making activities is also stressed in Grade 8 Syllabus (pages 3 and 41).

For example, the Introduction To Technology Syllabus for Grade 8 includes the following student performance objective and supporting competencies:

> Given an example of a new industry in each of the three areas of technology, students will describe how new technologies have created new jobs, ... then develop a training program to impart the broad-based skills necessary for employment in one of the career clusters.
>
> In order to do this, the student must be able to:
> a. Identify specific new jobs in each of the three areas of technology and their requirements.
> b. Identify major career clusters in each of the three areas of technology.
> c. List the transferable skills common to a career cluster (page 43).

Two instructional strategies for eighth grade are: "List careers and necessary training for people involved in service occupations" (page 30) and "Write a short career outline on medical careers which use new technologies to diagnose and treat medical problems" (page 31).

Introduction To Occupations

This is a course required in ninth and tenth grades for all students planning an area of concentration in an occupational education area. Introduction To Occupations is described as: "part of a continuum of Occupational Education curriculum... designed to include instruction in all areas of Occupational Education" ("Curriculum Overview", page 1).

The two purposes of this program are: (1) "to develop transferable skills which can be used in later work or home responsibilities" and (2) "to explore occupational interests and abilities prior to taking more specialized occupational courses" (page 1).

Two modules, "Working Citizen" and "Personal Resource Management", are required of all students in the program. In addition, two other modules are required and can be chosen from the other twenty-two available. The general needs for occupational data defined in the "Curriculum Overview" will be discussed as well as the needs identified for the two required modules.

Of the seven process skills in the "Curriculum Overview", two directly relate to occupational information and career information delivery systems:

> Career Options
> Career selection is an ongoing process addressing a comprehensive plan of flexible alternatives to deal with educational needs, occupational needs, and life career needs. Career options include: identification of the interrelationship of goals; values clarification; evaluation of interests and abilities; and career investigations (page 5).

> Decision Making/Problem Solving
> This includes the application of decision making/problem solving techniques and processes to work and personal experiences. Students will determine short-term and long-term goals, address immediate needs, and identify strategies for successful resolution (page 6).

The goal of "Working Citizen" is "to introduce students to the realities of the working world" (page 2).

> Every working citizen should be able to manage information and utilize resources efficiently, while realistically assessing his/her own personal skills and limitations. Furthermore, this knowledge and skill should be applied appropriately in career and occupational selection, acquisition, and maintenance (page 2).

The "Working Citizen" module contains five major topics, each of which "focuses on a specific area of information and personal development as it applies to the world of work (page 2). The five topics in the module are "designed to provide students with information and experience which will help them make future choices concerning work" (page 2).

Ten of the nineteen skill areas the student is expected to develop during this module relate to the use of occupational information. They are:

> 5. Assess personal skills and talents, relating them to individual choice of employment
> 6. Develop personal goals for education, training, and future employment
> 7. List and explain personal characteristics and qualities that are desirable for successful employment
> 8. Describe and utilize sources of employment information
> 9. Determine the relationship of education and training to acquisition and maintenance of employment
> 10. Identify at least two positions within two specific occupational fields of interest to the student, and describe the skills required for each position
> 11. Identify occupational positions that require advanced training
> 14. Analyze the working conditions of a chosen employment area, and explain the influence of working conditions on physical and mental health, as well as safety
> 16. Match personal job competencies with specific employment opportunities
> 17. Analyze the factors that influence individual job selection (pages 2-3).

In the outline for this module, five of the major units require occupational and career information (pages 4-6). In addition, its use is required to meet 'performance objectives/supporting competencies' listed throughout the draft syllabus.

Excerpts from "District Guidance Plan:

Implementing Commissioner's Regulation 100.2 (j)"

In November 1984, by action of the Board of Regents of the State of New York, a new Part 100 of the Commissioner's Regulations was adopted which modified the original requirements for district guidance plans. "The Regulation requires each school district to develop a district guidance plan to serve students kindergarten through twelfth grade (page 1).

The Regulations state in Section 100.2 (j):

> (1) Public Schools (and non-public schools). Each school district shall have a guidance program for all students...
> (ii) In grades 7-12, the guidance program shall include the following activities or services:
> (a) an annual review of each student's educational programs and career plans, with such reviews to be conducted with each student individually or with small groups by personnel certified or licensed as school counselors;
> (b) instruction at each grade level to help students learn about various careers and about career planning skills conducted by personnel certified or licensed as school counselors, or by classroom teachers in cooperation with school counselors;
> (c) other advisory and individual or group counseling assistance to enable students to benefit from the curriculum, to help students develop and implement postsecondary education and career plans,...

The State Education Department issued guidelines to assist district personnel to develop "guidance plans which meet the needs of their students consistent with Commissioner's Regulation 100.2 (j)." ("District Guidance Plan, page 1). In the Glossary, "Careers and ... career planning skills" are defined as the knowledge, understandings, and abilities related to the major guidance themes of self awareness/understanding, decision-making, planning, information gathering, values clarification and employability (page 4).

The document further states that:

> "Guidance program for all students" includes the planned program activities and services of personnel to enable students to benefit from the educational program, to develop the knowledge, skills and abilities necessary to implement career plans, to assist in their personal and social development, and to develop problem solving skills and techniques (page 5); [and that] "Instruction at each grade level to help students learn about various careers and about career planning skills conducted by personnel certified or licensed as school counselors, or by classroom teachers in

cooperation with school counselors" requires that counselors or classroom teachers must provide planned learning experiences to develop the career planning skills of students. This permits career education programs and activities to be delivered by other than counselors. It requires cooperation with counselors to assure a coordinated approach se that counselors, in their individual work with students, will reinforce the knowledge and skills gained in instruction in the personal career planning by the student. These experiences may be provided to groups of classroom size or smaller (pages 5-6).

The Guide offers suggestions for Section E, Activities to take place during grades 7-12 which might accompany an objective, "Instruction in careers and career planning." These activities include:

Self-evaluation (grade 7);
Use of career reference materials in library and Career Resource Center (grade 7);
Identification of job clusters related to student's own interests and abilities (grade 8)
Develop list of appropriate courses to be studied during the next school year -- keeping in mind tentative plans for college major and/or career goals (grade 9)
Investigating education and training requirements for occupations identified in Self-Directed Search Survey form (grade 9);
Orientation session by counselor re: Guidance Awareness (grade 9);
Values Clarification exercise (grade 10);
Decision-making exercise (grade 10);
Self-awareness activities (grade 10);
Career-awareness activities (grade 10);
Group guidance sessions at which students are instructed re: factors important in choosing a college (grade 11); and
Group guidance sessions re: preparing and updating a resume for college and/or potential employers (grade 12). (pages 27-31).

Since Guidance Plans must be reviewed each school year, the Guide offers suggestions for "student outcomes" which could serve as the basis for the review. Some of the suggested outcomes which are related to career planning and decision making are:

7th Graders will:
- o learn more about themselves by identifying their interests, abilities, aptitudes, values, and personal characteristics, and
- o be aware of their interests and of occupations related to their interests as derived form completion of a vocational interest inventory.

8th Graders will:
- o begin preparation of their personal educational plan;
- o understand that different jobs require different types of education and/or training;
- o understand the basic relationships between school subjects and eventual occupational requirements; and
- o identify related occupations for each subject they are studying.

9th Graders will:
- o understand that gathering information is an important step in educational and career planning, and
- o identify and list various types of information required.

10th Graders will:
- o recognize a number of ways in which occupations may be grouped.

11th Graders will:
- o set a long-range educational goal, and
- o develop a written action plan for reaching the goal.

12th Graders will:
- o demonstrate effective job interview skills in a role-play situation (pages 43-44).

The review guide which will be used by State Education Department reviewers in the formal review to determine compliance of district plans includes the following career guidance outcomes for grades 7-12.

9. An ANNUAL REVIEW of each student's educational progress and career plans is conducted with each student individually or with small groups of students by personnel certified or licensed as school counselors.

10. INSTRUCTION AT EACH GRADE LEVEL to help students learn about various careers and about career planning skills is conducted by personnel certified or licensed as school counselors, or be classroom teachers in cooperation with school counselors.

12. Other ADVISORY ASSISTANCE to help students develop and implement postsecondary education and CAREER PLANS is provided by teachers or counselors, or be certified teaching assistants under the supervision of counselors or teachers.

17. Other individual or group COUNSELING to help students develop and implement postsecondary education and CAREER PLANS is provided by certified or licensed school counselors, or by certified or licensed school psychologists, or by certified or licenses school social workers in cooperation with school counselors (pages 46-47).

Appendix II

SURVEYS OF USER SATISFACTION: INSTRUMENTS AND RELATED MATERIALS

A. Principal's Survey of User Satisfaction
B. Letter from Deputy Commissioner, James A. Kadamus, New York State Education Department
C. Letter to Principals
D. Special Notes for Principals
E. Counselor's Survey of User Satisfaction
F. Letter to Counselors
G. Student's Survey of User Satisfaction
H. Letter to Students
I. Parent's Survey of User Satisfaction
J. Letter to Parents

PRINCIPAL'S SURVEY OF USER SATISFACTION

PRINCIPAL'S NAME____

FULL NAME OF SCHOOL____

CITY, TOWN, OR COUNTY IN WHICH SCHOOL IS LOCATED_______________

NAME OF COMPUTERIZED CAREER INFORMATION DELIVERY SYSTEM USED IN

YOUR SCHOOL: (check one) ____CHOICES ____Discover ____GIS

____MetroGuide ___SIGI ___Other:____________________

We would like do acknowledge your participation in the final report of this study. May we do so?

_____YES _____NO

DIRECTIONS: Please circle your response to each item on this survey. If you wish to make additional comments, please feel free to do so.

A. Computerized career information delivery systems (CIDS) are used in different settings and with different groups within a school. Circle YES or NO to indicate whether or not your school has used the CIDS to support each activity listed below.

1. Individual career counseling YES NO
2. Career education/awareness groups or classes YES NO
3. College guidance YES NO
4. Special education programs YES NO
5. Occupational education programs YES NO
6. Basic skills or remedial reading YES NO
7. Subject class instruction such as English, economics, etc. YES NO
8. Job placement YES NO
9. Employability skills groups or classes YES NO
10. Counseling physically handicapped students YES NO

PRINCIPAL'S SURVEY: NAME OF SCHOOL____________________________

B. For each of the following items, please indicate your level of agreement or disagreement with the statement by circling the appropriate number.

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
11. In general, the school is satisfied with your computerized career information delivery system (CIDS).	5	4	3	2	1
12. Students have expressed the usefulness of the CIDS in their career or educational planning.	5	4	3	2	1
13. The information presented in the CIDS is appropriate for the students in my school.	5	4	3	2	1
14. Parents have expressed their satisfaction with the information their children get from the CIDS.	5	4	3	2	1
15. The system has been used successfully for instruction in subject areas, as well as for guidance purposes.	5	4	3	2	1
16. The system has been accepted easily by counselors.	5	4	3	2	1
17. The system is well worth the cost.	5	4	3	2	1
18. The CIDS enables counselors to make better use of their time.	5	4	3	2	1
19. The amount of time it took to train counselors was appropriate.	5	4	3	2	1
20. There have been no significant problems with scheduling students to use the system.	5	4	3	2	1

PLEASE RETURN COMPLETED SURVEY BEFORE APRIL 30, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office,
New York, New York 10028-9991

NEW YORK
THE STATE OF LEARNING

THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, N.Y. 12234

ASSISTANT COMMISSIONER FOR OCCUPATIONAL AND CONTINUING EDUCATION
THE NEW YORK STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12234

OCE # 13

March 10, 1986

TO: District Superintendents of Schools
Superintendents of Selected School Districts

FROM: James A. Kadamus, Assistant Commissioner
and Chairman, NYSOICC James A. Kadam

SUBJECT: Announcement of Special Study for Computerized Career Information Systems

A new study of computerized career information systems was recently initiated by the State of New York. Through a competitive proposal process the Education Department and the Department of Labor, in cooperation with the New York State Occupational Information Coordinating Committee have selected Deborah Perlmutter Bloch and Joyce Ford Kinnison as the contractors to conduct the study.

In the course of the study, Dr. Bloch and Ms. Kinnison will need to gather information from the following:

- School districts and BOCES
- Offices of the State Education Department including the Office of Vocational Rehabilitation
- Offices of the Department of Labor
- Office of the Commission for the Blind and Visually Impaired

To gather the needed information, surveys of a sample of administrators, clients, students and parents will be conducted and a sample of sites utilizing career information delivery systems will be visited.

This study is of great importance to the State of New York since it will be an initial step to insure the appropriateness and accuracy of the delivery of career information in the future. We, therefore, urge your cooperation in responding to requests from Dr. Bloch and Ms. Kinnison and offer you our assurance that all information on individuals and individual agencies will be kept confidential and presented only as aggregate group data.

If you are contacted for a survey or site visit and would like additional information, please contact:

Barbara Shay, Chief
Bureau of Occupational Education Policy
Development
New York State Education Department
One Commerce Plaza, Room 1624
Albany, NY 12234
(518) 473-7408

cc: Directors of Occupational Education

Deborah Perlmutter Bloch, Ph.D.

April 7, 1986

Dear Principal:

The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems in order to plan for their future use. Your school has been selected to participate in a survey to determine the level of satisfaction with systems currently in use.

The attached letter from James A. Kadamus, Deputy Commissioner for Occupational and Continuing Education at the State Education Department, explains the study and requests your participation and cooperation.

Participation in this study involves only two activities on your part. The first is to complete the enclosed Principal's survey of user satisfaction and return it before April 30, 1986. The second is to distribute surveys of user satisfaction to a counselor or teacher and to ten students. Full instructions are on the attached sheet.

If you have any questions, please call Dr. Deborah Perlmutter Bloch at (212) 794-1098.

We look forward to receiving your information so that the final report and recommendations will accurately reflect your school's experience with a computerized career information system.

Sincerely yours,

Deborah P. Bloch

Enclosures

SPECIAL NOTES FOR PRINCIPALS

SURVEY OF USER SATISFACTION
WITH COMPUTERIZED CAREER INFORMATION DELIVERY SYSTEMS

1. Please complete the attached Principal's Survey of User Satisfaction and return it before April 30, 1986.

2. Ask the professional person in your school who is most familiar with the computerized career information delivery system to complete the Counselor's Survey of User Satisfaction and return it before April 30, 1986.

3. Select, or have the appropriate professional select, ten students who have used your computerized career information delivery system and ask each of the students to complete and return the Student's Survey of User Satisfaction.

4. Ask the same ten students who have used your computerized career information delivery system to have their parents complete and return the attached Parent's Survey of User Satisfaction.

NOTE: You are NOT responsible for collecting or returning any of the completed surveys except your own. Envelopes have been provided for each respondent. We hope this effort to keep your administrative responsibility to a minimum encourages your participation in this study.

NOTE: At no time will you or your staff be asked for the names of, or any other information about, the student or parent respondents.

NOTE: The information in all reports of the study will be aggregate data. No identification of the responses by individuals or schools will be possible.

Thank you very much for your cooperation.

COUNSELOR'S SURVEY OF USER SATISFACTION

FULL NAME OF SCHOOL____

CITY, TOWN OR COUNTY WHERE SCHOOL IS LOCATED____________________

NAME OF THE COMPUTERIZED CAREER INFORMATION DELIVERY SYSTEM YOU USE:

___CHOICES ___Discover ___GIS ___MetroGuide ___SIGI

___Other:______________________________

POSITION OF RESPONDENT (Please check one):

_____Counselor
_____Social Worker
_____Teacher
_____Librarian
_____Other: Please fill in _________________________________

A. Computerized career information delivery systems (CIDS) are used in different settings and with different groups within a school. Circle YES or NO to indicate whether or not you have used the CIDS in your school to support each activity listed below.

1. Individual career counseling YES NO

2. Career education/awareness groups or classes YES NO

3. College guidance YES NO

4. Special education programs YES NO

5. Occupational education programs YES NO

6. Basic skills or remedial reading YES NO

7. Subject class instruction such as English, economics, etc. YES NO

8. Job placement YES NO

9. Employability skills groups or classes YES NO

10. Counseling physically handicapped students YES NO

B. Computerized career information delivery systems (CIDS) and their printed materials are used to help students at various points in the career decision making process. Considering both group and individual use, indicate whether or not you have observed each of the following outcomes for users of the CIDS in your school.

11. Increased awareness of self in relation to occupational or educational choices YES NO

12. Increased awareness of the transferability of skills acquired in one occupation to those skills needed in other occupations YES NO

13. Gained general knowledge of the labor market YES NO

14. Gained general knowledge about careers YES NO

15. Gained information about job seeking skills YES NO

16. Gained general information about educational and training options YES NO

17. Gained information about specific educational and training institutions, such as colleges, trade schools, high schools, and/or short-term training programs YES NO

18. Gained information about financial aid opportunities YES NO

19. Made a decision about a career choice YES NO

COUNSELOR'S SURVEY. NAME OF SCHOOL__________________________

20. Made a decision about further education or training YES NO

C. Listed below are information components and related materials found in many computerized career information delivery systems. Please indicate the degree of usefulness of each item as it is presented in the CIDS you are using in your school.

	Extremely Useful	Very Useful	Moderately Useful	Not Very Useful	Not At All Useful	Not Applicable
21. Occupational descriptions	5	4	3	2	1	0
22. Occupational groups or cluster	5	4	3	2	1	0
23. Employment outlook information	5	4	3	2	1	0
24. Wage and salary information	5	4	3	2	1	0
25. Physical demands and activities required of a job	5	4	3	2	1	0
26. Licensing, certification, and tests required for a job	5	4	3	2	1	0
27. Information about related occupations	5	4	3	2	1	0
28. Information about educational or training programs related to occupations	5	4	3	2	1	0
29. Descriptions of secondary and/or post-secondary educational and training programs	5	4	3	2	1	0
30. Information about occupations related to education and training programs	5	4	3	2	1	0
31. Educational and training institution descriptions	5	4	3	2	1	0
32. Financial aid and scholarship information	5	4	3	2	1	0
33. Employability skills information (resume writing, interviewing, etc.)	5	4	3	2	1	0
34. User (student) handbooks and guides	5	4	3	2	1	0
35. Interactive occupational exploration strategy	5	4	3	2	1	0
36. Ability for users to query system as to why a specific occupations did not appear on their lists	5	4	3	2	1	0
37. Interactive educational institutions exploration strategy	5	4	3	2	1	0
38. Methods of direct access to occupational information files	5	4	3	2	1	0
39. Methods of direct access to educational and training information files	5	4	3	2	1	0
40. Links to published assessment instruments	5	4	3	2	1	0

COUNSELOR'S SURVEY: NAME OF SCHOOL____________________________

D. Training for counselors and other professionals which focuses on the use of a computerized career information delivery system (CIDS), its hardware, its information files, and its user materials is considered to be an important factor in the usefulness of a CIDS in a school. Please answer the following questions about the training you received on the system you are using in your school.

41. Did you receive training in the use of your CIDS? YES NO
(If NO, skip to section E.)

42. If YES, from whom?

_____vendor or central distributor

_____someone in your school or school district

_____other: please specify______________________________________

43. How useful was it? 5 4 3 2 1

E. Counselor manuals are usually part of a total CIDS package. Please answer the following questions about the counselor materials which are part of the system your school is using.

44. Do you have a counselor's handbook or implementation guide? YES NO
(If NO, skip to section F.)

45. How useful is it? 5 4 3 2 1

F. The next two questions deal with the length of time it ordinarily takes a student to go through a session with the CIDS.

46. What is the average time per session for system users?

_____less than 30 minutes

_____30 minutes to 1 hour

_____more than 1 hour

47. In your opinion, what is the ideal length of time it should take a student to complete a session at the computer?__________

____

G. It is important that CIDS software be designed so that the student does not have problems using the program. In addition, the information which is presented in the CIDS should be easy to understand. Please answer the following questions about the "user friendliness" of the software and the presentation of information.

48. The CIDS program which my school is using is easy for most of the students to use. YES NO

49. The information which students receive while using the CIDS is easy for them to understand. YES NO

50. If you were designing your ideal computerized career information delivery system, what would be its most important features? (Please use the back of this sheet for your answer.)

PLEASE RETURN COMPLETED SURVEY BEFORE April 30, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, New York 10028-9991

Deborah Perlmutter Bloch, Ph.D

April 7, 1986

Dear Counselor:

The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems in order to plan for their future use.

Your school has been selected to participate in a survey to determine the areas of satisfaction with computerized career information delivery systems now in use. The attached letter from James A. Kadamus, Assistant Commissioner for Occupational and Continuing Education, explains the study.

As a counselor or other professional using a career information system, you can provide essential information about the current use of computerized systems and their efficacy. We, therefore, appreciate your willingness to complete the attached survey.

Some of the questions on the survey are to be answered by circling YES or NO to reflect your answer. For others, you simply circle a numerical rating. The final question provides you the opportunity for an extended reply.

Please fill in the information requested at the top of the survey form and on each page of the survey, complete the survey, and return it in the attached envelope before April 30, 1986.

Thank you for your cooperation in this important matter.

Sincerely,

Deborah P. Bloch

STUDENT'S SURVEY OF USER SATISFACTION

FULL NAME OF THE SCHOOL YOU ATTEND________________________________

CITY, TOWN, OR COUNTY IN WHICH YOUR SCHOOL IS LOCATED______________

YOUR GRADE IN SCHOOL (Circle one) 9 10 11 12

NAME OF THE COMPUTERIZED SYSTEM YOU USED: (check one)

___CHOICES ___Discover ___GIS ___Metroguide

___SIGI ___Other________________________

HOW MANY TIMES HAVE YOU USED THE SYSTEM?___________________________

1. Before you used the system, were you given a user handbook or a guide to help you use the system? (If NO, skip to question 3.) YES NO
2. If YES, was the user handbook or guide useful in helping you to use and understand the system? YES NO
3. Was the system easy to use? YES NO
4. Was the information presented by the system easy to read and understand? YES NO
5. Did the computerized system help you learn something new about occupations? YES NO
6. Did the computerized system help you learn more than you knew before about how to make a decision about a career? YES NO
7. Did the computerized system help you understand something about the relationship between occupations and your interests? YES NO
8. Did the computerized system help you understand something about the relationship between occupations and your abilities? YES NO
9. Did the computerized system help you learn something about the relationship between occupations and education or training programs? YES NO
10. Did the computerized system help you learn something about how to prepare for an occupation? YES NO
11. Did using the computerized system help you make a decision about a career? YES NO
12. Did you get a printout to take away with you which contained the information you received while using the system? YES NO
13. Was it useful to you to be able to keep the printout for future reference? YES NO
14. Did you like using a computerized system to get career information? YES NO
15. Would you recommend the system to someone who needs the same kind of information you need? YES NO

If you have any suggestions to help make a computerized system more useful, please write them on the back of this sheet.

PLEASE RETURN YOUR COMPLETED SURVEY IN THE ENCLOSED ENVELOPE BEFORE APRIL 30, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, New York 10028-9991

Deborah Perlmutter Bloch, Ph.D.

April 7, 1986

Dear Student:

The State of New York is carrying out a study of career information delivery systems. The purpose of the study to see how well the computerized systems that are now used are meeting students' needs for career information.

As a person who has used a computerized system, you can provide information essential to this study. The information will be used to improve systems for your use in the future and for the future use of other people.

The attached survey is made up of fifteen questions. Please fill in the information asked for at the top of the survey form and answer each question by circling YES or NO.

After you have completed the survey, return it in the addressed, stamped envelope which is included with this letter before April 30, 1986.

Thank you for your cooperation.

Sincerely yours,

Deborah P. Bloch

PARENT'S SURVEY OF USER SATISFACTION

NAME OF THE HIGH SCHOOL YOUR CHILD ATTENDS:____________________

____

CITY, TOWN, OR COUNTY IN WHICH THE SCHOOL IS LOCATED:___________

CURRENT GRADE OF CHILD: (Circle one) 9 10 11 12

1. Do you think that your child's high school provides the information needed for making career and educational choices? YES NO

2-A. To the best of your knowledge, has your child ever brought home a printout of career or college information obtained from a computerized system at school? YES NO
(If NO, skip to Question 3-A.)

B. If YES, did you find the information valuable for the decisions your child is or was making? YES NO

3-A. Have you ever seen your child use a computer in school to get career or college information? YES NO
(If NO, skip to Question 4.)

B. If YES, did you think the computerized system was a valuable tool? YES NO

Computerized career information delivery systems can be used to help students explore and obtain information about occupations, educational and training programs, and colleges. For each of the following, please circle YES if you believe a computer would be a good tool for the purpose listed, or circle NO if you believe a computer would not be a good tool for the purpose listed.

4. Identify a list of careers based on a student's interests and abilities. YES NO

5. Identify a list of colleges which meet a student's needs and interests. YES NO

6. Clarify a student's values. YES NO

7. Show relationships between work and educational programs. YES NO

8. Deliver information about occupations. YES NO

9. Deliver information about areas of concentration in high school. YES NO

10. Deliver information about educational programs in colleges. YES NO

11. Deliver information about colleges and universities. YES NO

12. Deliver information about private trade schools. YES NO

13. Deliver information about financial aid and scholarships. YES NO

Thank you for your cooperation. Please return your completed survey in the enclosed envelope before April 30, 1986 to:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, New York 10028-9991

Deborah Perlmutter Bloch, Ph.D

April 7, 1986

Dear Parent:

The State of New York is conducting a study of the career and educational planning needs of junior and senior high school students and others to see how computerized systems can be used to meet these needs. A letter verifying this from the Assistant Commissioner for Occupational and Continuing Education at the State Department of Education is attached.

As a parent of a high school student, you can provide information essential to this study. We, therefore, appreciate your willingness to complete the attached survey.

The survey is made up of fourteen items. Please fill in the heading information, answer each question by circling either "Yes" or "No", and return the survey before April 30, 1986. A stamped, addressed envelope is enclosed for your convenience.

Thank you for your cooperation.

Sincerely,

Deborah P. Bloch

Enclosures

Appendix III

PARTICIPATING PRINCIPALS

PARTICIPATING PRINCIPALS

We would like to thank the following school principals and to acknowledge their participation in, cooperation with, and support of this study. Not only did they complete their Principal's Survey of User Satisfaction, they also facilitated the distribution of the other survery to the appropriate groups in their schools. Their interest and efforts contributed greatly to insuring the return of surveys and to making this study a success.

Morton Dameseck, Principal
    Franklin K. Lane High School
    Brooklyn, NY
Steven C. Applebaum, Principal
    Prospect Heights High School
    Brooklyn, NY
Saul F. Baily, Principal
    High School of Fashion Industries
    New York, NY
Joan Beutler, Principal
    Port Chester High School
    Port Chester, NY
Robert P. Burns, Principal
    Francis Lewis High School
    Fresh Meadows, NY

R. David Carhart, Principal
Liverpool High School
Liverpool, NY
John J. Dinneen, Principal
Madrid-Waddington Central High School
Madrid, NY
Barry M. Gould, Principal
Cooperstown Junior-Senior High School
Cooperstown, NY
Jack L. Groveman, Principal
Forest Hills High School
Forest Hills, NY
Edward Hom, Principal
Adlai E. Stevenson High School
Bronx, NY
Richard A. Klein, Principal
LaGuardia High School of the Arts
New York, NY
Frederick J. Koury, Principal
City-As School
New York, NY
Robert Leder, Principal
Herbert H. Lehman High School
Bronx, NY
Allen G. Leibowitz, Principal
New Utrecht High School
Brooklyn, NY

Bertram L. Linder, Principal
Benjamin N. Cardozo High School
Bayside, NY

Michael J. Lobasso
Babylon Junior-Senior High School
Babylon, NY

Betty Anne McDonough, Principal
George Washington Vocational and Technical High School
Brooklyn, NY

Edwin J. Martin, Jr., Principal
New Hartford Senior High School
New Hartford, NY

H. D. Mettelman, Principal
Camden High School
Camden, NY

Ralph S. Musco, Principal
Susan E. Wagner High School
Staten Island, NY

John Olsen, Principal
Williamsville East High School
Amherst, NY

Thomas J. Readyoff, Principal
Mahopac High School
Mahopac, NY

Paul Ripchik, Principal
Saratoga Springs High School
Saratoga Springs, NY

Randolph H. Ross, Principal
    Newtown High School
    Queens, NY
Paul Skinner, Principal
    Richfield Springs Central
    Richfield Springs, NY
Glenn Young, Principal
    Batavia High School
    Batavia, NY

Appendix IV
THE SITE VISIT FORM

SITE VISIT

SITE
Address
DATE System(s) Time in use
Respondent(s), Title(s)

Clientele, #

1. Major programmatic goals of career counseling program.

2. Most important kinds of information needed by clients to make career & educational decisions

SITE VISIT (2)

SITE

3. How a computer-based CIDS can help meet goals, deliver information.

4. Major strengths & weaknesses of system in use. (include training, Ancillary materials, length of session)

A. Strengths

B. Weaknesses

Appendix V

THE REQUEST FOR INFORMATION FROM VENDORS: INSTRUMENT AND RELATED MATERIALS

A. Request for Information
B. Letter to Vendors
C. Vendor Response Form

REQUEST FOR INFORMATION
FOR THE
NEW YORK STATE EDUCATION DEPARTMENT
"EVALUATION OF COMPUTERIZED CAREER INFORMATION SYSTEMS"

NAME OF SYSTEM____

ADDRESS____

CITY___________________________STATE____________ZIP_______

TELEPHONE____

DIRECTIONS

This request for information (RFI) is for the New York State Education Department "Evaluation of Computerized Career Information Systems." This study and other activities associated with it were described to you in a letter from Dr. Deborah Perlmutter Bloch dated May 14, 1986.

The overall purpose of the study is to identify the computerized career information delivery system or systems which can serve a broad range of uses including:

1. Implementation of three new occupational education curricula for the 7th, 8th and 9th grades -- Home and Career Skills, Introduction to Technology and Introduction to Occupations;
2. Implementation of guidance plans in the junior and senior high schools; and
3. Assisting career and educational planning of individuals in such groups as junior and senior high school students, out-of-school youth, community and technical college students, handicapped workers and other adults.

The RFI consists of ten major questions, most of which have many parts. Questions I through V require checks or brief responses. Please answer them directly on this form. Since questions VII through X require extended answers, please use additional sheets of paper, numbering them to correspond to the questions. Question VI requires that you provide printouts of informtion from your system. Please attach the printouts requested to this form.

BE SURE TO PUT YOUR SYSTEM NAME AT THE TOP OF EACH PAGE OF THIS FORM AS WELL AS ON YOUR SEPARATE RESPONSE SHEETS AND TO SIGN THE FINAL PAGE OF THIS DOCUMENT.

Mail the completed form POSTMARKED NO LATER THAN JUNE 16,1986

TO: Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, NY 10028-9991.

System Name ________________________________ 2

I. MAJOR FILES OR COMPONENTS

The following items have been identified as the major component elements of a computer-based career information system. For each component, please check YES if it is a separate file in your system. Check NO if it is not a separate file. (Please note: specific information items related to each component are listed in the next section.)

COMPONENT	YES	NO	COMMENTS
A. Occupational Information	_____	_____	____________________________
B. Labor Market Entry Information	_____	_____	____________________________
C. Secondary Programs of Study	_____	_____	____________________________
D. Post-secondary Programs of Study	_____	_____	____________________________
E. Two-year Colleges	_____	_____	____________________________
F. Four-year Colleges	_____	_____	____________________________
G. Post-secondary Vocational Training Institutions	_____	_____	____________________________
H. Financial Aid	_____	_____	____________________________
I. Scholarships (other than government sponsored or college-based)	_____	_____	____________________________

System Name ______________________________ 3

II. SPECIFIC INFORMATION

For each component above, items have been identified as essential to a system. Some of these should be available at the national level of information analysis, some should be available at the state (or even sub-state) level, others at both national and state levels

For each of the items which follow, please check all the columns that apply to your system:

> Checking the first column, NATIONAL, indicates that your system currently carries information on this item representing a national level of data analysis.
>
> Checking the second column, NYS, indicates that your system currently carries information specific to New York State for this item.
>
> Checking the third column, ABLE, indicates that your system is currently able to carry state-specific information for this item if it were supplied to you.

INFORMATION ITEMS NATIONAL NYS ABLE	CURRENT LEVEL OF ANALYSIS		
	NATIONAL	NYS	ABLE
A. Information Components Related to Specific Occupations			
1. Occupational title with identifying code	___	___	___
2. Occupational description	___	___	___
3. Occupational group or cluster	___	___	___
4. Job duties	___	___	___
5. Interests (of workers as validated in various studies)	___	___	___
6. Aptitudes	___	___	___
7. Temperaments	___	___	___
8. Entry level skills required for job	___	___	___
9. Physical demands (amount of weight the worker must lift or carry)	___	___	___
10. Physical activities	___	___	___
11. Tools, equipment, etc. used on the job	___	___	___
12. Environmental/work conditions	___	___	___
13. Hours of work and travel required on the job	___	___	___
14. Industries in which occupations occur (places of employment)	___	___	___

System Name ______________________________ 4

	NATIONAL	NYS	ABLE
15. Hiring channels	---	---	---
16. Career ladders and advancement opportunities	---	---	---
17. Occupational outlook	---	---	---
18. Current and future occupational supply and demand	---	---	---
19. Current employment (numbers, by occupation by industry)	---	---	---
20. Earnings and benefits (beginning, average, range, fringe benefits)	---	---	---
21. Education/training required	---	---	---
22. Licensing, certification, tests, etc. required	---	---	---
23. Helpful secondary school subjects	---	---	---
24. Related occupations	---	---	---
25. Related military occupations	---	---	---
26. Sources of additional information	---	---	---
27. Bias-free data base -- occupations represent the entire range of the labor market	---	---	---
28. Bias-free occupational titles and contents	---	---	---
29. Occupational classification and coding system based on the DOT or or SOC	---	---	---

B. Information Components Related to Labor Market Entry

30. Job seeking skills	---	---	---
31. Resume writing	---	---	---
32. Interview techniques	---	---	---
33. Employment services	---	---	---
34. Self-employment and entrepreneurial information	---	---	---

System Name ________________________________ 5

C. Information Components Related to Secondary Areas of Concentration

	NATIONAL	NYS	ABLE
35. Area of concentration description	___	___	___
36. Area of concentration group or cluster	___	___	___
37. Typical course work	___	___	___
38. Types of learning activities	___	___	___
39. Skills and knowledge acquired	___	___	___
40. Related entry level occupations	___	___	___
41. Related occupations requiring further study	___	___	___
42. Related post-secondary programs	___	___	___

D. Information Components Related to Post-Secondary Educational and Training Programs

43. Program description	___	___	___
44. Program group or cluster	___	___	___
45. Typical course work	___	___	___
46. Types of learning activities	___	___	___
47. Skills and knowledge acquired	___	___	___
48. Certificates or degrees earned	___	___	___
49. Normal length of time to complete certificate or degree	___	___	___
49. Related occupations	___	___	___
50. Related programs of study	___	___	___
51. Type(s) of institutions offering program	___	___	___

System Name ______________________________ 6

C. Information Components Related to Educational and Training Institutions

N.B.: For this section, you must check NATIONAL, NYS, OR ABLE 2 times for each item.

	TWO- AND FOUR-YEAR COLLEGES			VOCATIONAL TRAINING INST'NS. (POST-SEC.)		
	NATIONAL	NYS	ABLE	NATIONAL	NYS	ABLE
52. Name and address of educational or training institution	___	___	___	___	___	___
53. Geographic location	___	___	___	___	___	___
54. Type of institution	___	___	___	___	___	___
55. Admission Requirements (test scores, application procedures, application deadline, fees, physical exam, etc.)	___	___	___	___	___	___
56. Name and address of admissions contact person	___	___	___	___	___	___
57. Cost (in-state and out-of state tuition, room, board, fees)	___	___	___	___	___	___
58. Housing (availability, on-campus, off-campus, percent of undergraduates living on campus, required of freshmen, etc.)	___	___	___	___	___	___
59. Financial aid information (sources, application procedures, application deadline, average award, etc.)	___	___	___	___	___	___
60. Name and address of financial aid contact person	___	___	___	___	___	___
61. Education and training programs offered	___	___	___	___	___	___
62. Types of certificates or degrees awarded	___	___	___	___	___	___
63. Normal length of time to complete certificates/degrees offered	___	___	___	___	___	___
64. Special programs available (cooperative education, adult basic education, foreign study, ROTC, etc.)	___	___	___	___	___	___
65. Library and learning center facilities information	___	___	___	___	___	___
66. Support services available (counseling, learning lab, placement)	___	___	___	___	___	___
67. Services for handicapped (housing and building access, designated parking, interpreters for the deaf, tutors, learning aids, counseling, registration assistance, transportation for the mobility impaired)	___	___	___	___	___	___
68. Intercollegiate sports offered (by sex and availability of scholarships)	___	___	___	___	___	___
69. Accreditation information	___	___	___	___	___	___

System Name ________________________________ 7

F. Information Components Related to Major Sources of Financial Aid and Scholarships

N.B.: For this section, you must check NATIONAL, NYS, OR ABLE 2 times for each item.

	FINANCIAL AID (GOVERNMENT SPONSORED)			SCHOLARSHIPS (NOT GOV'T OR COLLEGE)		
	NATIONAL	NYS	ABLE	NATIONAL	NYS	ABLE
70. Name	---	---	---	---	---	---
71. Eligibility requirements	---	---	---	---	---	---
72. Application procedures and deadline	---	---	---	---	---	---
73. Size or basis of award	---	---	---	---	---	---
74. Name and address of contact person	---	---	---	---	---	---
75. How to obtain additional information	---	---	---	---	---	---

III. SYSTEM DESIGN CONSIDERATIONS

For each of the following elements of system design, please check YES if your system currently has this feature, NO if it does not.

SYSTEM DESIGN FEATURES	YES	NO	COMMENTS
1. Interactive structured search of occupations by such elements as interests, temperaments, values, and skills previously acquired	---	---	---------------------------
2. Ability for users to query the system as to why specific occupations did not appear on their lists	---	---	---------------------------
3. Ability to change answers in the search and generate lists of occupations based on the changed answer or answers	---	---	---------------------------
4. Direct access to information about occupations	---	---	---------------------------
5. Direct access to information about secondary areas of concentration	---	---	---------------------------
6. Direct access to information about post-secondary educational and training programs	---	---	---------------------------
7. Interactive structured search of educational institutions	---	---	---------------------------
8. Direct access to information about educational institutions	---	---	---------------------------
9. Ability to match institutions and educational programs	---	---	---------------------------
10. Ability to compare two or more educational institutions on the screen at one time	---	---	---------------------------

System Name ________________________________

	YES	NO	COMMENTS
11. Links to published assessment instruments			
12. Ability to use occupational characteristics to sort for similar occupations			
13. Interactive structured search of financial aid information			
14. Ability of clients to walk away from a session at the computer with a printed record of searches and information received			
15. Ability to create records for new and emerging occupations and training programs			

IV. SYSTEM SUPPORT MATERIALS AND TRAINING

For each of the following, please check YES if you provide the materials or service with your system, NO if you do not.

MATERIALS AND TRAINING	YES	NO	COMMENTS
1. Counselor implementation handbooks			
2. Lesson plans or guides for teachers			
3. User handbooks			
4. Training for counselors in system delivery			
5. Training for labor market and educational information analysts associated with the state or local system			
6. Training for managers or directors of the state or local systems			

V. LENGTH OF SESSION

Approximately how much time does it generally take for average high school students to complete a session in which they use the occupational exploration strategy or strategies and generate a list of occupations meaningful to them? _____________

VI. MACHINES AND MEDIA

1. List all the time-shared and microcomputer versions of your system currently available and supported by your organization.

2. One of the major uses for any New York State career information delivery system will be in classroom settings in grades 7 through 9. Describe any delivery media currently available and supported by your organization which would facilitate classroom delivery of occupational exploration and occupational information retrieval.

System Name ______________________________ 9

VII. COMPREHENSIVENESS OF INFORMATION

One of the concerns expressed by respondents of the surveys and by guidance personnel interviewed during the site visits was the accuracy and comprehensiveness of the information contained in a computerized system. To help in addressing this issue, please send, along with this form and your response sheets, a printout of the following:

1. All information which users would obtain if they used the direct access route to information about the occupation Physical Therapist.

2. Attributes assigned to the occupation Physical Therapist which would keep that occupation on the list of a client using your systems occupational structured search.

3. All information which users would obtain if they used the direct access route to information about the post-secondary program of study Computer Programming.

4. All information which users would obtain if they used the direct access route to information about the post-secondary institution State University of New York at Albany.

VIII. RESEARCH AND EVALUATION STUDIES

Please identify and describe briefly any studies of your system related to the following:

A. Validity and/or reliability of the instruments used to generate clients' occupational lists;
B. Validation of the occupational data;
C. Use of the system in junior high school and/or high school classroom or group settings;

Limit the studies to those related to your system as utilized in a state-based career information delivery system.

IX. ADDITIONAL FEATURES -- OPTIONAL QUESTION

If there are any additional or special features of your systems which you feel have not been adequately described by answering the questions in this request for information, please describe them.

X. COSTS

Assume the following:
A. Your system is a New York State career information delivery system.
B. You are delivering your basic system of occupational and educational information without any additions of data or files.
C. In the first year of delivery, there are 100 MS-DOS (IBM compatible) junior and senior high school sites; in the second

year, 100 similar sites are added; and in the third year, you are delivering to a total of 300 sites. These sites are located throughout the State.

1. What is the total cost of the system for each of the three years? Provide a work sheet to show the breakdown of costs for such items as initial and subsequent license fees to the State; per site license fees; other software fees; training of counselors; counselor implementation handbooks @ 1 per site per year; indices to the system @ 1 per site per year; user handbooks @ 500 per site per year; and any other costs needed so that the system can be fully implemented, delivered and used.

2. If the State provided data on entry level wages, employment outlook, and licensing requirements for 600 SOC based occupations, what would be the total costs for each of the three years for your organization to enter and maintain that information in your system and deliver it to the sites described above. Provide a breakdown of these costs by data entry costs to the State; by site use costs and/or other costs as applicable to the practices of your organization.

3. If the State wanted to enter the data in your system, would you provide the documentation necessary? What would be the cost of this option for each of the three years? Provide a breakdown as in 2.

Assume the State created an entirely new file which listed 350 JTPA program providers with information on the area and clients served and with links to the relevant occupational descriptions in your file.

4. What would be the total cost to the state for your system to incorporate and deliver this file over the the three years described above? Provide a breakdown as requested in question 2.

5. Describe your policies concerning copyrights and use of state modifications to your system.

6. You may have other systems which will meet the needs of New York as described in the directions to this RFI. If you do, please describe them briefly and give the cost of utilizing them in the three year scenario.

N.B.: Please be sure that all costs provided are accurate and realistic. While this is not a formal bid, it is expected that costs over the next three years will be consistent with those provided herein.

____ _______________

Authorized Signature Date

Deborah Perlmutter Bloch, Ph.D. *444 East 82nd Street • New York, NY 10028 (212) 794-1098*

May 14, 1986

Dear

The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems in order to plan for their future use in the state. A letter from Assistant Commissioner Kadamus verifying this information is included in this mailing. Your system is one of those selected for participation in the final stages of the study.

BACKGROUND AND ACTIVITIES TO DATE

Several major activities have already taken place as part of this study. These include (1) a review of the literature; (2) an Information Validation Survey completed by national and State experts in the fields of career guidance and occupational education; (3) Surveys of User Satisfaction sent to principals, counselors, parents, and students at a sample of schools using each of the systems; and 4) on-site visits and interviews with counselors and administrators. Samples of the survey instruments are included in this package for your information.

OUTLINE OF REQUIREMENTS FOR PARTICIPATION

Your participation is requested in three major activities, which are outlined below. Acceptance of this invitation indicates your willingness to participate in all three activities. They are:

1. Written response to a structured request for information.
2. Presentation and demonstration to a System Review Panel.
3. Review of the system and its materials by the Occupational Education Civil Rights Coordinating Unit.

1. Written Response To A Structured Request For Information. A request for information (RFI) regarding your system will be sent to you in May with a return three weeks from date of mailing. The kinds of information which will be requested include such items as implementation and utilization, content, availability on a variety of machines, flexibility in various settings, costs and fees, etc.

2. Presentation and Demonstration To A System Review Panel. The presentation and demonstration will take place on Tuesday, June 24, 1986, from 8:00 am to 5:00 pm at the Ramada Inn on Western Avenue in Albany, New York. The System Review Panel will consist of approximately fifty people representing the SOICC Statutory Committee, the SOICC Advisory Committee, the major providers of Occupational Education, the Education Information Centers, the Office of Occupational and Continuing Education, teachers, counselors, student leadership groups, and others deemed appropriate.

Because of time limitations, the day will be very structured. In the morning, you will give a 15 minute speech on predetermined topics related to your system. These topics will be be sent to you in May along with the RFI. The morning's presentation will be in a theatre style.

In the afternoon, you will provide a physical demonstration of your system. Members of the System Review Panel will circulate among vendors. Each System Review Panel member will be required to review every system. Therefore, you may anticipate a 30 minute demonstration to each of six or seven groups. Each CIDS will be provided with a table near a 3 pronged electrical outlet. You will be expected to bring your own equipment and a power strip if needed.

The System Review Panel will have rating sheets and will rate each system based on the presentation and demonstration. It should be stressed that the systems are not in competition with each other, but are being measured against a set of criteria.

3. Review of the System and Its Materials by the Occupational Education Civil Rights Coordinating Unit (OECRCU). The OECRCU has expressed some concern over the compliance of systems with civil rights laws and regulations. A separate review of each system to ascertain any areas of possible non-compliance will be conducted by this Unit's staff.

You will demonstrate your system to the OECRCU on June 25 in their offices. No other vendor will be present at your demonstration.

To prepare the OECRCU staff, please send one copy of the following printed materials:

User's Manual
Counselor's Manual
Brochure describing your system
Description of any system components for uses related to special populations and/or equity issues (optional).

To: Paul Tonetti, Associate
Division of Civil Rights and Intercultural Relations
Room 471, Education Building Annex
New York State Education Department
Albany, New York 12234.

By: May 22, 1986.

ADDITIONAL INFORMATION

Rooms have been set aside at the Ramada Inn at the State rate of $39 per person per night. This includes a full breakfast. The Ramada Inn, should you be arriving by train, bus, or plane, has a courtesy van available until 11 pm. Local driving directions are included.

With the exception of a lunch provided on the 24th, all expenses are to paid by the vendors. However, it should be noted that there are no exhibition hook-up or demonstration charges for the vendors.

WHAT TO DO NOW

We realize how tight schedules are at this time of year, but New York State really needs this information to move on things in the fall. We, therefore, hope that you will find the time to cooperate in this project. Please:

1. Return the enclosed response form no later than May 21, 1986.
2. Send the identified materials to the OECRCU immediately.
3. Make your travel reservations.
4. Plan to attend the pre-dinner vendor welcome, "A Bit Of A Byte", on June 23 from 6:00 to 8:00 pm at the Ramada Inn.

Joyce Kinnison and I look forward to seeing you. If you have any questions, please call me at 212/794-1098.

Sincerely,

Deborah Perlmutter Bloch

RESPONSE TO CIDS EVALUATION DEMONSTRATION

I agree to participate in the New York State evaluation of CIDS as outlined in the letter of May 13th by Deborah Perlmutter Bloch. I understand this includes all of the following:

1. Written response to a structured request for information.
2. Presentation and demonstration to a System Review Panel.
3. Review of the system and its materials by the Occupational Education Civil Rights Coordinating Unit (OECRCU).

I understand that all expenses which will be incurred are the responsibility of my organization.

NAME OF CIDS______________________________

AUTHORIZED SIGNATURE______________________________

DATE______________________________

NAME OF PARTICIPATING REPRESENTATIVE____________________

____

ADDRESS OF REPRESENTATIVE______________________________

____

HOME TELEPHONE NUMBER______________________________

OFFICE TELEPHONE NUMBER______________________________

PLEASE COMPLETE AND RETURN BY MAY 21, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, NY 10028-9991

Appendix VI

SYSTEM REVIEW PANEL:
INSTRUMENT AND RELATED MATERIALS

A. Letters of Invitation and Response Forms:
  1. SOICC Members
  2. SOICC Advisory Committee and Other Selected State Experts in Guidance and Occupational Education
  3. Selected Major Providers of Occupational Education
  4. Selected Student Leadership Programs

B. Letter of Instructions to Vendors

C. System Review Rating Instructions and Forms

Deborah Perlmutter Bloch, Ph.D.

MEMORANDUM

DATE: May 14, 1986

TO: SOICC Members

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to participate in the New York State Education Department Evaluation of Career Information Delivery Systems

---

As you know, the State of New York is conducting a study to evaluate the current use of computerized career information delivery systems (CIDS) in order to plan for their future use in the State. You are cordially invited to participate in the final stage of the evaluation of selected CIDS.

The evaluation will take place from 8:00 am to 5:00 pm on Tuesday, June 24, 1986 at the Ramada Inn on Western Avenue in Albany, New York. It will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. The members of the System Review Panel be provided with rating sheets and will be expected to rate each system. A continental breakfast and buffet lunch will be provided.

Because of the highly structured nature of the evaluation, it is essential that all participants attend for the entire day. If this is not convenient for you, please feel free to designate a member of your staff to represent you on the System Review Panel. If you choose to send a representative, we will of course, be delighted to have you observe any part of the day's proceedings.

Your representative must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm.

Please complete the attached response form and return it no later than May 28, 1986 in the enclosed envelope.

If you have any questions, please call me at 212/794-1098. I look forward to seeing you on June 24th.

RESPONSE TO THE SYSTEM REVIEW PANEL INVITATION

NAME____

TITLE____

AGENCY____

1. Will you participate as a member of the System Review Panel from 8:00 to 5:00 on June 24, 1986?

_____Yes _____No

2. If you cannot paticipate as a member of the System Review Panel, will you be sending a representative of your agency? Because of the nature of the competitive rating process, he or she must register between 8:00 and 9:00 am and attend from 9:00 am to 5:00 pm.

_____Yes _____No

NAME OF REPRESENTATIVE______________________________________

TITLE OF REPRESENTATIVE_____________________________________

WORK ADDRESS OF REPRESENTATIVE______________________________

____

TELEPONE NUMBER OF REPRESENTATIVE___________________________

PLEASE COMPLETE AND RETURN IN THE ENCLOSED ENVELOPE BY MAY 28, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, NY 10028-9991

Deborah Perlmutter Bloch, Ph.D.

MEMORANDUM

DATE: May 14, 1986

TO: Members of the SOICC Advisory Committee and Other Selected State Experts in Guidance and Occupational Education

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to participate in the New York State Education Department Evaluation of Career Information Delivery Systems

The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems (CIDS) in order to plan for their future use in the state. A letter from Assistant Commissioner Kadamus verifying this information is included in this mailing.

You have been recommended as a member of the System Review Panel for the final stage of the evaluation of selected CIDS. This evaluation will take place from 8:00 am to 5:00 pm on Tuesday, June 24, 1986 at the Ramada Inn on Western Avenue in Albany, New York.

The evaluation will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. You will be provided with rating sheets and will be expected to rate each system.

A continental breakfast and buffet lunch will be provided. In addition, you will be reimbursed for your travel by rail or car (at the rate of $.23 per mile plus tolls), for a room at the Ramada Inn in Albany on June 23rd, and for dinners up to $9.50 on the 23rd and 24th. No room reimbursement will be provided for the 24th. If travel home is not possible on the 24th, please telephone me to discuss this situation before you return the response form. For your information, driving directions to the Ramada Inn have been enclosed. If you arrive by train, call the Ramada Inn for a courtesy van pick-up until 11:00 pm.

Because of the highly structured nature of the evaluation, less than a full day's participation on your part will not be possible. You must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm. Please note: reimbursement will be provided only to those who fulfill the full day's requirement.

We realize this is a busy time for you. Nevertheless, because of the importance of this study to New York State, we urge you to attend. No expertise in computers is required. You have been selected on the basis of your knowledge of occupational education or guidance needs.

Please complete the attached response form and return it no later than May 28, 1986 in the enclosed envelope.

If you have any questions, please call me at 212/794-1098. I look forward to seeing you on June 24th.

Deborah Perlmutter Bloch, Ph.D.

M E M O R A N D U M

DATE: May 14, 1986

TO: Members of the SOICC Advisory Committee and Other Selected State Experts in Guidance and Occupational Education

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to participate in the New York State Education Department Evaluation of Career Information Delivery Systems

---

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The evaluation will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. You will be provided with rating sheets and will be expected to rate each system.

A continental breakfast and buffet lunch will be provided. In addition, you will be reimbursed for your travel by rail or car (at $.23 per mile plus tolls). Travel directions to the Ramada Inn are enclosed. If you arrive by train, call the Ramada Inn for a courtesy van pick-up.

Because of the highly structured nature of the evaluation, less than a full day's participation on your part will not be possible. You must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm. Please note: reimbursement will be provided only to those who fulfill the full day's requirements.

We realize this is a busy time for you. Nevertheless, because of the importance of this study to New York State, we urge you to attend. No expertise in computers is required. You have been selected on the basis of your knowledge of occupational education or guidance needs.

Please complete the attached response form and return it no later than May 28, 1986 in the enclosed envelope. If you have any questions, please call me at 212/794-1098. I look forward to seeing you on June 24th.

Deborah Perlmutter Bloch, Ph.D.

M E M O R A N D U M

DATE: May 14, 1986

TO: Members of the SOICC Advisory Committee and Other Selected State Experts in Guidance and Occupational Education

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to participate in the New York State Education Department Evaluation of Career Information Delivery Systems

---

The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems (CIDS) in order to plan for their future use in the State. A letter from Assistant Commissioner Kadamus verifying this information is included in this mailing.

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The evaluation will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. You will be provided with rating sheets and will be expected to rate each system.

A continental breakfast and buffet lunch will be provided.

Because of the highly structured nature of the evaluation, less than a full day's participation on your part will not be possible. You must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm.

We realize this is a busy time for you. Nevertheless, because of the importance of this study to New York State, we urge you to attend. No expertise in computers is required. You have been selected on the basis of your knowledge of occupational education or guidance needs.

Please complete the attached response form and return it no later than May 28, 1986 in the enclosed envelope.

If you have any questions, please call me at 212/794-1098. I look forward to seeing you on June 24th.

RESPONSE TO SYSTEM REVIEW PANEL INVITATION

NAME____

SCHOOL OR AGENCY________________________________

ADDRESS____

____

TELEPHONE NUMBER________________________________

____I will

____I will not

participate in the evaluation of career information delivery systems on June 24, 1986.

I understand that because of the nature of the competitive rating process, I must register between 8:00 and 9:00 am and attend from 9:00 an to 5:00 pm.

____
Signature

PLEASE COMPLETE AND RETURN IN THE ENCLOSED ENVELOPE BY MAY 28, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, NY 10028-9991

Deborah Perlmutter Bloch, Ph.D.

MEMORANDUM

DATE: May 13, 1986

TO: Selected Major Providers of Occupational Education

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to Participate in the New York State Education Department Review of Career Information Delivery Systems

---

The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems (CIDS) in order to plan for their future use in the State. A letter from Assistant Commissioner Kadamus verifying this information is included in this mailing.

Your agency has been selected as one of the major providers of occupational education to participate in the final stage of the evaluation of selected CIDS. Please select a counselor, director of guidance, or director of pupil personnel services to serve on the System Review Panel.

The evaluation will take place from 8:00 am to 5:00 pm on Tuesday, June 24, 1986 at the Ramada Inn on Western Avenue in Albany, New York. It will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. The members of the System Review Panel will be provided with rating sheets and will be expected to rate each system.

A continental breakfast and buffet lunch will be provided. In addition, you will be reimbursed for your travel by rail or car (at $.23 per mile plus tolls). Travel directions to the Ramada Inn are enclosed. If you arrive by train, call the Ramada Inn for a courtesy van pick-up.

Because of the highly structured nature of the evaluation, less than a full day's participation on the part of your representative will not be acceptable. He or she must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm. Please note: reimbursement will be provided only to those who fulfill the full day's requirement.

We realize this is a busy time of year for you and your staff. Nevertheless, because of the importance of this study to New York State, we urge your participation. Expertise in computers is not required. Please select a representative familiar with the guidance needs of the students you serve.

Please complete the attached response form and return it no later than May 28th in the enclosed envelope. If you have any questions, please call me at 212/794-1098.

Deborah Perlmutter Bloch, Ph.D.

MEMORANDUM

DATE: May 13, 1986

TO: Selected Major Providers of Occupational Education

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to Participate in the New York State Education Department Review of Career Information Delivery Systems

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The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems (CIDS) in order to plan for their future use in the State. A letter from Assistant Commissioner Kadamus verifying this information is included in this mailing.

Your agency has been selected as one of the major providers of occupational education to participate in the final stage of the evaluation of selected CIDS. Please select a counselor, director of guidance, or director of pupil personnel services to serve on the System Review Panel.

The evaluation will take place from 8:00 am to 5:00 pm on Tuesday, June 24, 1986 at the Ramada Inn on Western Avenue in Albany, New York. It will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. The members of the System Review Panel will be provided with rating sheets and will be expected to rate each system.

A continental breakfast and buffet lunch will be provided. In addition, you will be reimbursed for your travel by rail or car (at the rate of $.23 per mile plus tolls), for a room at the Ramada Inn in Albany on June 23rd, and for dinners up to $9.50 on the 23rd and 24th. No room reimbursement will be provided for the 24th. If travel home is not possible on the 24th, please telephone me to discuss this situation before you return the response form. For your information, driving directions to the Ramada Inn have been enclosed. If you arrive by train, call the Ramada Inn for a courtesy van pick-up until 11:00 pm.

Because of the highly structured nature of the evaluation, less than a full day's participation on the part of your representative will not be possible. He or she must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm. Please note: reimbursement will be provided only to those who fulfill the full day's requirement.

We realize this is a busy time of year for you and your staff. Nevertheless, because of the importance of this study to New York State, we urge your participation. Expertise in computers is not required. Please select a representative familiar with the guidance needs of the students you serve.

Please complete the attached response form and return it no later than May 28th in the enclosed envelope. If you have any questions, please call me at 212/794-1098.

RESPONSE TO SYSTEM REVIEW PANEL INVITATION

SCHOOL OR AGENCY______________________________

ADDRESS______________________________

PRINCIPAL/DIRECTOR______________________________

____We will

____We will not

participate in the evaluation of career information delivery systems on June 24, 1986.

The individual named below will represent the school or agency. I understand that because of the nature of the competitive rating process, he or she must register between 8:00 and 9:00 am and attend from 9:00 am and 5:00 pm.

NAME OF REPRESENTATIVE______________________________

WORK ADDRESS OF REPRESENTATIVE ______________________________

____

____

TELEPHONE NUMBER OF REPRESENTATIVE______________________________

____
Authorized Signature

PLEASE COMPLETE AND RETURN IN THE ENCLOSED ENVELOPE BY MAY 28, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office
New York, NY 10028-9991

Deborah Perlmutter Bloch, Ph.D.

M E M O R A N D U M

DATE: May 14, 1986

TO: Selected Student Leadership Programs

FROM: Deborah Perlmutter Bloch, Ph. D. DPB

RE: Invitation to participate in the New York State Education Department Evaluation of Career Information Delivery Systems

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The State of New York is conducting a study to evaluate the current use of computerized career information delivery systems (CIDS) in order to plan for their future use in the State. A letter from Assistant Commissioner Kadamus verifying this information is included in this mailing.

Your occupational education student leadership program has been selected to participate in the final stage of the evaluation of selected CIDS. Please select a student leader and faculty member from your program to serve on the System Review Panel. (The faculty member with both accompany the student and be a member of the panel.)

This evaluation will take place from 8:00 am to 5:00 pm on Tuesday, June 24, 1986 at the Ramada Inn on Western Avenue in Albany, New York. It will consist of two parts. In the morning, each CIDS will present orally in response to pre-determined questions. After lunch, all the CIDS will demonstrate their systems. Members of the System Review Panel will be provided with rating sheets and will be expected to rate each system.

A continental breakfast and buffet lunch will be provided.

Because of the highly structured nature of the evaluation, less than a full day's participation on the part of your representatives will not be possible. They must be able to register between 8 and 9 am, begin work by 9 am, stay for a buffet lunch, and complete the review of demonstrations scheduled to end at 5 pm.

We realize this is a busy time of year in the schools. Nevertheless, because of the importance of this study to New York State, we urge your participation. Expertise in computers is not required.

Please complete the attached response form and return it no later than May 28, 1986 in the enclosed envelope. If you have any questions, please call me at 212/794-1098.

RESPONSE TO SYSTEM REVIEW PANEL INVITATION

SCHOOL OR AGENCY____

ADDRESS____

DIRECTOR/PRINCIPAL____

____We will

____We will not

participate in the evaluation of career information delivery systems on June 24, 1986.

* * *

If participating:

The student leader and faculty member named below will represent the program. I understand that because of the nature of the competitive rating process, they must register between 8:00 and 9:00 am and attend from 9:00 am and 5:00 pm.

NAME OF STUDENT LEADER____

NAME OF FACULTY MEMBER____

WORK ADDRESS OF FACULTY MEMBER____

____

____

TELEPHONE NUMBER OF FACULTY MEMBER____

* * *

AUTHORIZED SIGNATURE____

PLEASE COMPLETE AND RETURN IN THE ENCLOSED ENVELOPE BY MAY 28, 1986 TO:

Dr. Deborah P. Bloch
Post Office Box 20369
Cherokee Station Post Office

Deborah Perlmutter Bloch, Ph.D. *444 East 82nd Street • New York, NY 10028 (212) 794-1098*

DATE: May 19, 1986

TO: Selected Career Information Delivery Systems

FROM: Deborah Perlmutter Bloch

RE: Oral Presentation on June 24, 1986

On the morning of June 24, 1986, your system's representative will give a fifteen minute oral presentation to the System Review Panel for the New York State evaluation of computerized career information systems.

Please direct that presentation to the following four topics:

1. An overview of your system
2. The philosophy underlying your system
3. The use of your system in classroom or group settings at the junior or senior high school level
4. The major contribution your system makes to an individual's career planning.

Just as a reminder, the other requirements for your participation in this study are:

-Demonstrations of your system to the System Review Panel on the afternoon of June 24th; (Be sure to bring user handbooks and materials for explanation by the panel.)

-Demonstration of your system to the Occupational Education Civil Rights Coordinating Unit on the day previously specified;

-Completion of the enclosed Request for Information.

If you have any questions on the presentation, demonstrations or request for information, please call me at (212) 794-1092 or Joyce Kinnison at (919) 469-0081.

SYSTEM REVIEW PANEL RATING INSTRUMENT

CAREER INFORMATION DELIVERY SYSTEMS PRESENTATION AND DEMONSTRATION

JUNE 24, 1986

NAME____

TITLE____

SCHOOL, AGENCY OR PROGRAM____

The presentation and demonstration of computer-based career information delivery systems to the System Review Panel is one of the culminating activities in the study of these systems being conducted by New York State. The overall purpose of the study is to identify the system or systems best suited to meet the various needs of individuals and programs. These include:

1. Implementation of the three occupational education curricula "Home and Career Skills," "Introduction to Technology," and "Introduction to Occupations;"

2. Implementation of guidance plans for junior and senior high school students;

3. Career and educational planning by individuals in such groups as junior and senior high school students, out-of-school youth, community and technical college students, handicapped workers and other adults.

In the course of this study, a great deal of information has been gathered on the components of the selected systems, the comprehensiveness and accuracy of the data within the systems, the reliability and validity of the instruments used for exploration within the systems, and the costs of the systems. What cannot be gathered through surveys and requests for information is how it feels to use a system, how appealing or interesting it is to a student or client, or what the holistic experience or gestalt of using the system is. That is what you are being asked to evaluate.

You may feel that the items on which you will be asked to rate the systems are subjective. They would be if only one person rated the systems. However, each of you is an expert in a particular area of occupational education or counseling. Therefore, the sum total of your expert ratings becomes an objective evaluation of the usefulness and appropriateness of the systems.

When all the information gathered during this study is analyzed, your ratings will be combined with the results of the vendors' responses to request for information, the Surveys of User Satisfaction, and the site visits to formulate the final conclusions and recommendations.

4. In making your ratings, you must circle one number for each item. If you circle more than one number or do not respond to an item, your entire rating form will be invalid. Feel free to comment at length on specific features or qualities of a system in the blank spaces provided.

5. When you are rating a system, judge it in terms of the needs and characteristics of the population your school, agency or program serves.

6. Remember that the systems are not being judged against each other, but against a set of standards.

7. After you have finished rating a system, move to the next sequentially numbered table.

8. When you have finished rating all six systems, turn in your entire rating booklet to Deborah Bloch or Joyce Kinnison at the door.

Thank you for your assistance in this process.

AGENDA

8:00 - 9:00 am	Registration and continental breakfast
9:00 - 9:30 am	Welcome and orientation Questions and answers on the rating process
9:30 - 10:30 am	First three oral presentations by vendors
10:30 - 10:45 am	Brief break
10:45 - 11:45 am	Final three oral presentations by vendors
12:00 - 12:45 pm	Buffet lunch in the Loft Room
12:45 - 5:00 pm	Vendor demonstrations and system review panel ratings in the Guilder Room

DIRECTIONS

1. In the morning, each vendor will make a 15 minute presentation on the four following topics.
A. An overview of the system;
B. The philosophy underlying the system;
C. The use of the system in classroom or group settings at the junior or senior high school level;
D. The major contribution the system makes to an individual's career planning.

Space has been provided in the rating book for you to take notes, on each presentation. The notes are to aid you in making your ratings. They will not be considered as part of your rating of the system.

2. In the afternoon, all the vendors will have tables at which they will demonstrate their systems and user materials. Please begin viewing the demonstrations at 12:45 pm. Start at the table number on the lower right-hand corner of your booklet. Spend approximately 30 minutes at each vendor's table.

3. After you finish at each demonstration, complete the rating for that system based on your experience in the demonstration and the oral presentation of the morning. For each system, there are 15 items to be rated on a scale of 1 to 5, by circling the number.

5=Excellent
4=Good
3=Fair
2=Poor
1=Atrocious

Do not hesitate to use the extremes of the scale. If a feature is not available at all within a system, circle the 0.

NOTES ON THE ORAL PRESENTATION

FOR --

1. Overview of System Components

2. Underlying Philosophy

3. Use of the System in Classroom or Group Settings

4. Major Contribution of the System to Individuals' Career Planning

RATINGS

FOR ____

System Feature	Excellent	Good	Rating Fair	Poor	Atrocious	Not Available
1. Ease of reading	5	4	3	2	1	0
2. Clarity of screen display	5	4	3	2	1	0
3. Appeal of the system -- the extent to which it encourages client or student use	5	4	3	2	1	0
4. Relevance of the user handbook to the student's or client's point of view	5	4	3	2	1	0
5. Appropriateness of the structured search of occupations	5	4	3	2	1	0
6. Ability of the user to discontinue the search before completing it and move directly to occupational information	5	4	3	2	1	0
7. Level of detail of occupational information	5	4	3	2	1	0
8. Appropriateness and currency of terminology in occupational information	5	4	3	2	1	0
9. Clearly defined links between occupational and educational information	5	4	3	2	1	0
10. Appropriateness of the structured search of post-secondary educational institutions	5	4	3	2	1	0
11. Level of detail of college and university information	5	4	3	2	1	0
12. Ability of users to enter the system at their points of readiness or interest rather than at system-determined entry points	5	4	3	2	1	0
13. Ability to use the system in group or classroom settings	5	4	3	2	1	0
14. Overall ease of use	5	4	3	2	1	0
15. Overall rating	5	4	3	2	1	0

Comments

Please use the remainder and reverse side of this page to make any comments you wish about the system, its contents, its usefulness, its strengths, or its weaknesses.

Appendix VII
PROCEDURE AND INSTRUMENTS FOR EVALUATING CIDS

A. Procedure for evaluating CIDS

B. Rating Guide for Information Components, System Design Considerations, and Support Materials and Training

C. Rating Guide for Occupational and College Information Printouts

D. Rating Guide for System Review Panel Ratings

A. PROCEDURE FOR EVALUATING CIDS

The procedure for rating CIDS which was developed for use in this study can be used by any person or group wishing to evaluate a system against established standards. The standards used in this study were validated through an extensive survey process described in the report.

The evaluation consists of three components which are handled in a seven-step process. The findings of this study have shown that this process can serve as a strong predictor of user satisfaction with a CIDS.

The seven steps are outlined below and associated rating instruments follow in this Appendix.

Step 1: Collect information from vendors of CIDS concerning their system's information components, system design features, and support materials and training. These items are contained in the first four sections of the Request for Information (RFI) which appears in Appendix V.

Step 2: Collect printouts from the vendors of CIDS which contain information about one occupation and one college contained in their systems. Specify an occupation and a college the CIDS should contain and about which you can get reliable information. Section VII of the RFI is designed to collect this.

Step 3: Plan and conduct the vendor demonstration to a System Review Panel which represents groups which use CIDS and other agency and school personnel. This step is discussed in detail in the "Methodology" chapter in this study, and the System Review Panel rating book can be found in Appendix VI.

Step 4: Rate the information which the vendors provided in response to the RFI according to the Rating Guide for Information Components, System Design Considerations, and Support Materials and Training, which follows in this Appendix. Each item is worth 1, 2, or 3 points as indicated. (Some of the items on the RFI have not been assigned points. Therefore, the rating guide does not include all items on the RFI.)

The guide contains a possible 300 points. In order to give equal weight to all three of the standards for evaluating CIDS in this process, the total points received by CIDS as the result of this first rating are divided by 300 to obtain a percentage score.

Step 5: Rate the occupational and college information on the printouts provided by the vendors using the Rating Guide of Occupational and College Information Printouts in this Appendix. There is a total of 100 possible points available from this rating. The points received by a CIDS provides a percentage score for the comprehensiveness and accuracy of information contained in the data base.

If a CIDS printout contains no information on an item, score it 0. However, if you are not able to score all items because you do not have the information available to judge the CIDS printout, subtract the worth of that item from 100 to compute the highest possible total score. Then divide the score earned by the CIDS by that highest possible score. This converts the earned score to a percentage.

Step 6: Rate the results of the System Review Panel. First compute the mean of each item by adding scores of all raters on that item and dividing by the number of raters. Then double the mean scores on the items to be weighted double according to the Rating Guide for System Review Panels. Finally add all the means for each CIDS for the score of the CIDS on this portion.

Step 7: Compute the final score for each CIDS. Add the scores obtained as the result of steps 4, 5, and 6. Divide by 3. That is the final score. Systems scoring less than 60 should not be approved. A final score of 60-69% is passing; 70-79% is satisfactory; 80-89% is good; 90-100% is excellent.

B. RATING GUIDE FOR INFORMATION COMPONENTS, SYSTEM DESIGN CONSIDERATIONS, AND SUPPORT MATERIALS AND TRAINING

Directions for Rating: Assign the points indicated for each item the vendors check as part of their system in response to the Request for Information. If the vendor checks NYS, give points for both NYS and ABLE since if they have information, they are able to have it.

ITEMS	WORTH OF ITEMS		
	NATIONAL	NYS	ABLE
A. Information Components Related to Specific Occupations			
1. Occupational description	2		
2. Occupational group or cluster	2		
3. Job duties	2	2	2
4. Interests (of workers as validated in various studies)	2		
5. Aptitudes	2		
6. Temperaments	2		
7. Entry level skills required for job	2	2	2
8. Physical demands (amount of weight the worker must lift or carry)	2		
9. Physical activities	2		
10. Tools, equipment, etc. used on the job	2		
11. Environmental/work conditions	2		

ITEMS	WORTH OF ITEMS		
	NATIONAL	NYS	ABLE
12. Hours of work and travel required on the job	2	2	2
13. Industries in which occupations occur (places of employment)	2	2	2
14. Hiring channels	1	1	1
15. Career ladders and advancement opportunities	1		
16. Occupational outlook	2	2	2
17. Current and future occupational supply and demand	1	1	1
18. Current employment (numbers, by occupation by industry)	1	1	1
19. Earnings and benefits (beginning, average, range, fringe benefits)	2	2	2
20. Education/training required	2		
21. Licensing, certification, tests, etc. required	2	2	2
22. Helpful secondary school subjects	2		
23. Related occupations	2		
24. Related military occupations	1		
25. Sources of additional information	1	1	1
26. Bias-free data base -- occ's represent entire range of the labor market	2	2	2

ITEMS	WORTH OF ITEMS		
	NATIONAL	NYS	ABLE
27. Bias-free occupat'l titles and contents	2		
28. Occupational classification and coding system based on the DOT or or SOC	2		
B. Information Components Related to Labor Market Entry			
29. Job seeking skills	2		
30. Interview techniques	1		
31. Employment services	1	1	1
32. Self-employment and entrepreneurial information	1	1	1
C. Information Components Related to Secondary Areas of Concentration			
33. Area of concentration description	1	1	1
34. Area of concentration group or cluster	1		
35. Typical course work	1	1	1
36. Types of learning activities	1	1	1
37. Skills and knowledge acquired	1	1	1
38. Related entry level occupations	1		
39. Related occupations requiring further study	1		
40. Related post-secondary programs	1	1	1
D. Information Components Related to Post-Secondary Educational and Training Programs			
41. Program description	2		
42. Program group or cluster	2		

ITEMS	WORTH OF ITEMS		
	NATIONAL	NYS	ABLE
43. Typical course work	2		
44. Types of learning activities	2		
45. Skills and knowledge acquired	2		
46. Certificates or degrees earned	2		
47. Normal length of time to complete certificate or degree	2		
48. Related occupations	2	2	2
49. Related programs of study	2		
50. Type(s) of institutions offering program	2	2	2

	TWO- AND FOUR-YEAR COLLEGES (POST-SEC.)			VOCATIONAL TRAINING		
	NATIONAL	NYS	ABLE	NATIONAL	NYS	ABLE
E. Information Components Related to Educational and Training Institutions						
51. Geographic location	2				1	1
52. Type of institution	2					
53. Admission Requirements (test scores, application procedures, application deadline, fees, physical exam, etc.)	2				1	1

ITEMS	WORTH OF ITEMS					
	TWO- AND FOUR-YEAR COLLEGES (POST-SEC.)			VOCATIONAL TRAINING		
	NATIONAL	NYS	ABLE	NATIONAL	NYS	ABLE
54. Name and address of admissions contact person	1				1	1
55. Cost (in-state and out-of state tuition, room, board, fees)	2	2	2		1	1
56. Housing information	2					
57. Financial aid information (sources, application procedures, application deadline, average award, etc.)	2	2	2		1	1
58. Name and address of financial aid contact person	1					
59. Education and training programs offered	2	2	2		1	1
60. Types of certificates or degrees awarded	2				1	1
61. Normal length of time to complete certificates/degrees offered	2				1	1

ITEMS	WORTH OF ITEMS					
	TWO- AND FOUR-YEAR COLLEGES (POST-SEC.)			VOCATIONAL TRAINING		
	NATIONAL	NYS	ABLE	NATIONAL	NYS	ABLE
62. Special programs available (cooperative education, adult basic education, foreign study, ROTC, etc.)	2	2	2		1	1
63. Library and learning center facilities information	1					
64. Support services available (counseling, learning lab, placement)	2	2	2		1	1
65. Services for handicapped	2	2	2		1	1
66. Intercollegiate sports offered (by sex and availability of scholarships)	2					
67. Accreditation	1				1	1

F. Information Components Related to Major Sources of Financial Aid and Scholarships

ITEMS	WORTH OF ITEMS					
	FINANCIAL AID (GOVERNMENT SPONSORED)			SCHOLARSHIPS (NOT GOV'T OR COLLEGE)		
	NATIONAL	NYS	ABLE	NATIONAL	NYS	ABLE
68. Eligibility requirements	1	1	1	1	1	1
69. Application procedures and deadline	1	1	1	1	1	1
70. Size or basis of award	1	1	1	1	1	1
71. Name and address of contact person	1	1	1	1	1	1
72. How to obtain add'l information	1	1	1	1	1	1

G. System Design Considerations and features

	YES
73. Interactive structured search of occupations by such elements as interests, temperaments, values, and skills previously acquired	3
74. Ability for users to query the system as to why specific occupations did not appear on their lists	3
75. Ability to change answers in the search and generate lists of occupations based on the changed answer or answers	3

ITEMS	WORTH OF ITEMS YES
76. Direct access to information about occupations	3
77. Direct access to information about secondary areas of concentration	1
78. Direct access to information about post-secondary educational and training programs	1
79. Interactive structured search of educational institutions	3
80. Direct access to information about educational institutions	3
81. Ability to match institutions and educational programs	3
82. Ability to compare two or more educational institutions on the screen at one time	1
83. Links to published assessment instruments	1
84. Ability to use occupational characteristics to sort for similar occupations	1
85. Interactive structured search of financial aid information	1
86. Ability of clients to walk away from a session at the computer with a printed record of searches and information received	3
87. Ability to create records for new and emerging occupations and training programs	3

ITEMS	WORTH OF ITEMS
H. Support Materials and Training	
	YES
88. Counselor implementation handbooks	3
89. Lesson plans or guides for teachers	3
90. User handbooks	3
91. Training for counselors in system delivery	3
92. Training for labor market and educational information analysts associated with the state or local system	1
93. Training for managers or directors of the state or local systems	1

C. RATING GUIDE FOR OCCUPATIONAL AND COLLEGE INFORMATION PRINTOUTS

Directions for Rating: Assess the accuracy and comprehensiveness of each item on the printouts provided by the vendors and assign the appropriate number of points.

COMPONENT	EXCELLENT	GOOD	FAIR	POOR	ATROCIOUS	NONE
Occupational Information						
1. Bias-free titles and descriptions	5	4	3	2	1	0
2. Occupational description	5	4	3	2	1	0
3. Job duties	5	4	3	2	1	0
4. Interests and temperaments	5	4	3	2	1	0
5. Aptitudes	5	4	3	2	1	0
6. Skills, education, training req'd for entry level position	5	4	3	2	1	0
7. Physical demands/activities	5	4	3	2	1	0
8. Working conditions	5	4	3	2	1	0
9. Future outlook	5	4	3	2	1	0
10. Earnings	5	4	3	2	1	0
11. Related occupations	5	4	3	2	1	0
12. Places of employment	5	4	3	2	1	0
College Information						
1. Admission Requirements	5	4	3	2	1	0
2. Cost (for year specified)	5	4	3	2	1	0
3. Type of institution	5	4	3	2	1	0

COMPONENT	EXCELLENT	GOOD	FAIR	POOR	ATROCIOUS	NONE
4. Housing availability	5	4	3	2	1	0
5. Information about the graduate programs in education	5	4	3	2	1	0
6. Services for handicapped	5	4	3	2	1	0
7. Intercollegiate sports	5	4	3	2	1	0
8. Enrollment: # of students	5	4	3	2	1	0

On the guide for rating occupational and college information printouts, rating points are assigned to measure comprehensiveness and accuracy. Some sources which can be used to determine the accuracy of the occupational information are: SOC Career Profiles (National Crosswalk Center, 1985;) Occupational Employment and Training Data (U.S. Department of Labor, 1986;) Occupational Outlook Handbook, 1986-87 (U.S. Department of Labor, 1986;) and the Guide for Occupational Exploration (U.S. Department of Labor, 1984.) Sources for the college information include the college catalogue and/or information supplied by the New York State Office of Higher and Professional Education.

Some additional guidelines for the rating of occupational information follow.

1. Bias free job titles and descriptions
    5=all information completely bias free
    4=1 statement or title showing bias
    3=2 statements or titles showing bias

2=3 statements or titles showing bias
1=4 statements or titles showing bias
0=5 or more statements or titles showing bias

2. Occupational description
   - 5=description totally accurate and complete
   - 4=1 inaccurate statement and/or critical piece of information missing
   - 3=2 inaccurate statements and/or critical pieces of information missing
   - 2=3 inaccurate statements and/or critical pieces of information missing
   - 1=4 inaccurate statements and/or critical pieces of information missing
   - 0=5 or more inaccurate statements and/or critical pieces of information missing, or description not present
3. Job duties, including tools and equipment used, if applicable (can be part of the description or separate)
   - 5=adequate, correct information to understand duties of the job
   - 3=partial information present and correct
   - 0=information not correct, or job duties not present
4. Interests and temperaments
   - 5=both interests and temperaments present and accurate
   - 4=both interests and temperaments present, with 1 or 2 missing or inaccurate
   - 3=both interests and temperaments present, with 3 or 4 missing or inaccurate

2=either interests or temperaments (but not both) present and accurate
1=either interests or temperaments (but not both) present, with 1 or 2 missing or inaccurate
0=either interests or temperaments (but not both) present, with two or more inaccurate, or neither interests nor temperaments present

5. Aptitudes
   5=9 aptitudes listed and coded correctly
   4=7-8 aptitudes listed and coded correctly
   3=5-6 aptitudes listed and coded correctly
   2=3-4 aptitudes listed and coded correctly
   1=1-2 aptitudes listed and coded correctly
   0=all aptitudes incorrect, or aptitudes not present
6. Skills, education, and training required for entry level positions
   5=all items included and accurate
   4=1 inaccurate or missing item
   3=2 inaccurate or missing items
   2=3 inaccurate or missing items
   1=4 inaccurate or missing items
   0=5 inaccurate or missing items, or category not present
7. Physical demands and activities
   5=all applicable physical demands and activities present and accurate
   4=1 physical demand or activity not present or inaccurate
   3=2 physical demands or activities not present or inaccurate

2-3 physical demands or activities not present or inaccurate
1-4 physical demands or activities not present or inaccurate
0-5 or more physical demands or activities not present or inaccurate, or physical demands and activities not present

8. Working conditions (includes environmental conditions and hours of work and travel)
    5-all information present and correct
    4-1 information item missing or incorrect
    3-2 information items missing or incorrect
    2-3 information items missing or incorrect
    1-4 information items missing or incorrect
    0-5 or more information items missing or incorrect, or working conditions not present
9. Future outlook
    5-future outlook statement present and accurate to specified time in the future (eg. 10 years, to 1995)
    4-future outlook statement present and accurate without specified time in the future
    0-future outlook statement incorrect, or future outlook statement not present
10. Earnings (designated as beginning wage and/or average wage for experiences workers)
    5-information accurate (annual salary or hourly wage) with correct benefits statement
    4-information accurate (annual salary or hourly wage) without benefits statement
    0-earnings information inaccurate, or earnings information

not present

11. Related occupations, including occupational group
    - 5=3 or more related occupations and the occupational group present and accurate
    - 4=2 related occupations and the occupational group present and accurate
    - 3=3 or more related occupations present and correct, but without the occupational group
    - 2=2 related occupation, but without occupational group
    - 1=occupational group present and accurate, but without related occupations
    - 0=related occupations and/or occupational group totally inaccurate, or item not present
12. Places of employment
    - 5=major industries and/or types of employers present and accurate
    - 3=partial list or major industries and/or types of employers present and accurate
    - 0=item inaccurate, or not present

D. RATING GUIDE FOR SYSTEM REVIEW PANEL RATINGS

Directions for Rating: The rating of the system will have been carried out by the System Review Panel. Use this chart to identify the items* which will be weighted twice the others.

SYSTEM FEATURE	EXCELLENT	GOOD	FAIR	POOR	ATROCIOUS	NONE
1. Ease of reading	5	4	3	2	1	0
2. Clarity of screen display	5	4	3	2	1	0
3. Appeal of the system*	10	8	6	4	2	0
4. Relevance of user handbook	5	4	3	2	1	0
5. Appropriateness of structured search of occupations	5	4	3	2	1	0
6. Ability to discontinue search & go directly to occ info	5	4	3	2	1	0
7. Level of detail of occupational information	5	4	3	2	1	0
8. Appropriateness and currency of terminology	5	4	3	2	1	0
9. Clearly defined links between occ. and ed. information	5	4	3	2	1	0
10. Appropriateness of the structured search of post-secondary ed. institutions	5	4	3	2	1	0
11. Level of detail of college and university information	5	4	3	2	1	0

SYSTEM FEATURE	EXCELLENT	GOOD	FAIR	POOR	ATROCIOUS	NONE
12. Ability to enter the system at points of readiness/interest*	10	8	6	4	2	0
13. Use in group or classroom setting*	10	8	6	4	2	0
14. Overall ease of use*	10	8	6	4	2	0
15. Overall rating*	10	8	6	4	2	0